Vol 3 No 2 UK £1

COMMODORE

COMPUTING INTERNATIONAL

The Independent Commodore Magazine

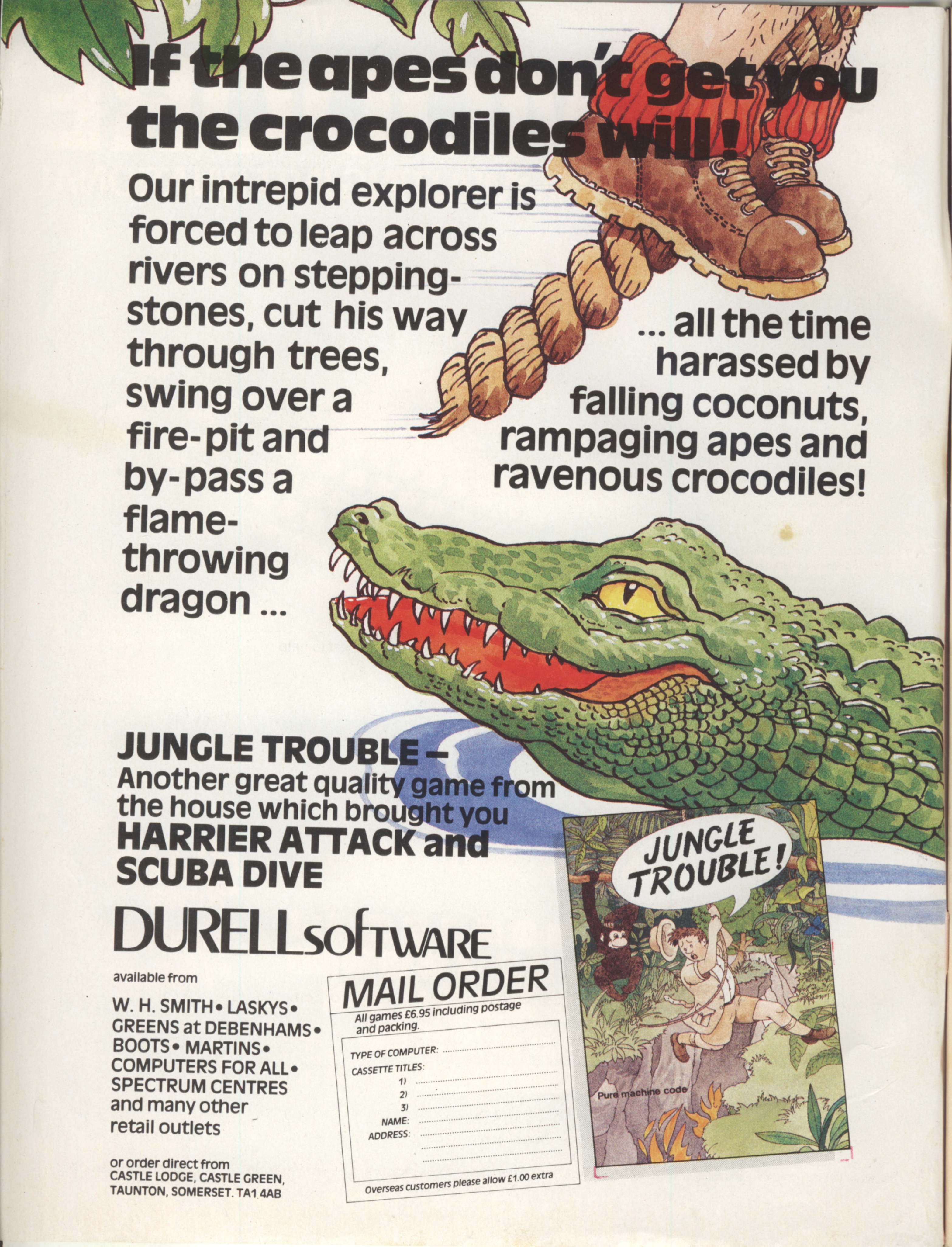
FREE
Games supplement

What's new?
–Commodore 16
–Plus/4

Show review

PLUS
***News**
***Reviews**
***Listings**

BELGIUM FR130 FRANCE FR18.5 GERMANY 6DM
CANADA $4·50 USA $3·25



If the apes don't get you the crocodiles will!

Our intrepid explorer is forced to leap across rivers on stepping-stones, cut his way through trees, swing over a fire-pit and by-pass a flame-throwing dragon ...

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COMMODORE
COMPUTING INTERNATIONAL
JULY/AUGUST 1984

COVER STORY

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See our Show Report for news of the two new Commodore machines – the C16 and the Plus/4 – launched at the 5th International Commodore Show

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COMMODORE 64 BASIC BEGINNER'S PACK . . .

A subtle blend of software and book to enliven the dullest of Commodore 64's.

The Software

Honey Aid 1: a complete utility that adds 28 new commands to Commodore 64 BASIC, in three groups.

- **Toolkit:** these commands help you to create your own programs in BASIC. One day you'll wonder how you did without them.
- **Graphics:** use colour and hires graphics with ease – decorate and colour your 64.
- **Synthesizer:** build all the SID chip's features into your program. No need for POKEs, just use Honey Aid's BASIC-like commands.

In addition – on the tape:

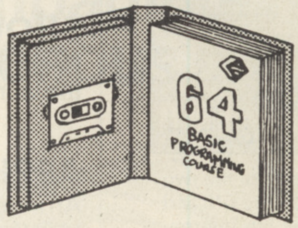
- **Char Gen:** a full-featured character generator that will redefine any or all of the standard 64 characters, even the ones used by Char Gen – while it runs.
- **Sprite Gen:** a sprite generator to define sprites – normal or enlarged, single colour or multicolour. Displays the sprite as it's defined. Transforms the design into DATA statements.
- **Composatune:** explores the SID chip. Allows you to type in a tune and to store this in DATA statements. Later, you can recover this to re-create the tune. Buildasound: lets you explore all the features of SID and hear them in action.
- **Guesser:** a unique computer-aided-simulation (CAL) of a number-guessing game. Demonstrates how each statement works and shows it all in action.
- **Hangman:** a full hangman game to provide entertainment and education.
- **Breakout:** a video ball game, break down the wall to score.
- **Blockade:** a two-player game, trap your opponent, they're trapped – you win.
- **Balltrap:** get the ball in the net to win – frustrating but fun!
- **plus, plus . . .**

The Book

A 360-page text that guides you step-by-step, through the 64's BASIC – learning as you go! Each piece of software on the tape (and many more) is developed stage-by-stage. Once the fundamentals of BASIC are mastered, the specialities of the 64 are introduced.

From a simple number-guessing game via a reaction-tester, a hangman game and three video games to character and sprite generators, the projects increase gradually in complexity. This unique approach ensures that you learn – and that learning is fun!

The Package



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LONDON NW2

ALSO AVAILABLE:

BASIC Packs @ £10.50

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Children's BASIC Packs @ £9.95

COMMODORE 64: VIC 20: BBC

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Dr Watson is a trademark of
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Please supply the following:

Qty	Name of Pack	Price
	Commodore 64 BASIC Pack @ £10.50	
	TOTAL	£

Name ______________________

Address ______________________

Signature ______________________

Access Number ______________________

Micronet 800 for 64 users

Commodore 64 users will soon be able to subscribe to Micronet 800, the award-winning 30,000 page magazine service on Prestel. Micronet have prepared a dedicated database for the 64 to be launched in August. The Micronet modem Communication Cartridge, available nationwide for £43 (excluding VAT), is required to download software from this database.

As a member of Micronet, the 64 user will have access to downloadable software 24 hours a day – some of it free of charge.

In addition to this, software from software houses such as Llamasoft, Anirog and Bubble Bus will be on sale for up to 20 per cent less than the retail price.

Other attractions include the Micronet electronic 'Mailbox', daily microcomputer news, the electronic bulletin board for swapping hardware and software and a 24-hour technical advice service. Also Micronet's new 'Open-University' style home education service, armchair shopping, 'Starnet' – the interctive strategy game for hundreds of players, programming courses and ICPUG's own pages for Commodore enthusiasts.

The Micronet and Prestel subscription charges amount to £1 a week, plus the cost of a local telephone call which is 38 pence an hour, evenings and weekends.

Only Micronet will be supplying the unique communications cartridge for downloading software, together with modem, although any standard V21 or V23 modem can be used.

Commodore to rival IBM

Commodore could well become IBM's major PC plug-compatible rival according to sources quoted in the independent IBM magazine, PC.

American analysts and software houses say that Commodore's position is strengthened significantly by the recent deal with Bytec-Comtern for the rights to IBM compatible technology used in the Hyperion, together with the agreement with Intel to second source the 8088 chip.

The article concludes with a prediction that Commodore will undercut IBM's prices by 40-50 per cent.

In response to this article Commodore's marketing manager, John Baxter, comments: "The industry is increasingly recognising that Commodore's competitive strength lies in its policy of being totally self-sufficient in manufacturing.

"We have demonstrated our ability to outstrip all competitors in other segments of the market and it's clear that independent observers now see us as poised to repeat that process in the PC sector."

Oxfam appeal

Oxfam are appealing for computer software through their chain of shops in the London area. They would appreciate software, especially games cassettes, for personal and home computers of any make.

The appeal is being staged in London, although any of Oxfam's 650 shops all over the country would welcome donations,

Many of you may have games that you have tired of through excessive play, or that are no longer a challenge to your skills, so why not donate them to a worthy cause?

Oxfam are also appealing to manufacturers and retailers for any items which could be spared.

Take your donations to any of Oxfam's shops in the London area, or contact Bernie McDermott or Liz Shannon at Oxfam, 172 Archway Road, London N6. Tel: 01-348 4225 or 01-341 3087.

Education offer extended

Demand for Commodore's special discount scheme for schools and colleges has resulted in the extension of the scheme to the end of this school term.

Over 1,000 Commodore computer systems have been purchased by schools and colleges under the scheme which has been in operation for three months. The system costs £299.99 (excluding VAT) and comprises a 64, floppy disk drive, LOGO software and Simon's BASIC 1. This presents a saving of £170 over normal retail prices.

Commodore's marketing manager, John Baxter, says: "The Commodore 64 has already proved throughout Canada, USA and Europe that it is the ideal classroom computer – it has, for example, over 80 per cent of the educational computer market in Germany.

"Our system is half the price of other comparable systems and hopefully this is enabling more schools to introduce computers."

Record sales for Commodore

Worldwide sales of Commodore are currently totalling over $100 million a month (that's about £67 million).

Sales in the education sector are making an increasing contribution to worldwide sales, while Commodore's biggest sales success is the 64, of which nearly 500,000 have been sold in the last year in the UK alone.

CBM's parent company, Commodore International, more than doubled its sales in the nine months ended March 31 1984. Sales rose from $469 million in the same period last year to a record $967 million, ensuring sales exceeding $1 billion by the end of the company's financial year on June 30.

Chairman Irvine Gould comments: "The primary contributor to Commodore's record results in the third quarter and nine month period was continuing strong sales of Commodore's microcomputer systems to the business, educational and home markets.

"The current final quarter's results are expected to benefit from a continuing strong demand for the Commodore 64."

PRODUCT NEWS

It's Magic Voice

Commodore's speech module, the Magic Voice for the 64 is due for release shortly.

The module gives the 64 a voice which can imitate the voice of a male, female or child. Because the speech is digitised, inflections are preserved. The module fits into the cartridge port and has a port of its own permitting other cartridges to be 'stacked' on top. This enables it to give a voice to cartridges utilising its features, but will also allow other cartridges to work normally.

The module contains the data for the 26 letters of the alphabet, plus numbers and vocabulary of 187 commonly used words. Commodore also intend to produce a disk with extra vocabulary.

In addition, the module enables both speech and music and voice and graphics to be generated simultaneously and it is programmable from Commodore Basic or machine code.

To utilise Magic Voice, Commodore are developing a range of 'talking' software. The first programs will be educational – helping children to read, write and count.

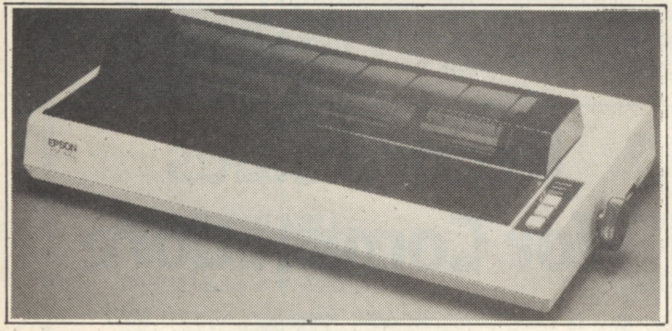
The first in the series is Talking books which comprise two packages entitled Magic Garden and Magic Toolbox. Each one contains five stories intended to teach children how to read and write.

The first four programs in BJ the Bear series (The second in the series): Get Ready to Think, Get Ready to Read, Get Ready to Write and Get Ready for Numbers will be dealt with at a more advanced level in programs with titles such as Start to Read and Continue to Read.

Manuals for parents and teachers accompanying the programs will explain how to get the best from the software.

Even further in the future, Commodore plan to release an educational cartridge entitled A bee C's, adventures and foreign language software.

Contact: Commodore, 675 Ajax Avenue, Slough, Berkshire SL1 4BG. Tel: 0753 79292.



Printer

Epson's new wide 15 inch carriage dot matrix printer, the RX-100 is now available in the UK for £450+VAT. The printer is provided with an IEEE-488 interface and is compatible with the Commodore Pet.

The RX-100 is a replacement for the MX-100 and Epson claim that it is an improved version – more versatile, with a higher print quality. It prints at 100 characters per second and can halve the speed for applications requiring reduced noise. Other features include a tractor and friction feed, two full 96 ASCII character sets, II International character sets and 32 graphic characters. The 9×9 dot matrix head has a graphic capability and improvements include proportional spacing and Elite and Pica type sizes.

Contact: Epson (UK) Ltd, Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH. Tel: 01 902 8892

Home Office

Audiogenic have launched Home Office for the 64 on cassette and claim that it combines the functions of a wordprocessor with a data base system for £12.95.

It is intended to be used both in the home or in a small office. Letters, documents and reports can be edited and filed for future reference and the system provides functions such as text manipulation, formatting commands – centering, underlining, double-spacing, variable margins and a sorting routine.

The program also includes an integral machine code centronics type interface routine for parallel printers. A manual accompanies the program.

Contact: Audiogenic, PO Box 88, Reading. Tel: 0734 595647.

DIY alarm

If you live in fear of things going bump in the night, the DIY burglar alarm system from Micro-Security may be just the thing you need.

The complete kit costs £99 excluding VAT and P&P and operates with either a VIC-20 or 64. It contains the I/O interface, security program on tape or disk, control unit, external alarm bell, internal buzzer, panic button, ten sets of magnetic reed contacts for windows and doors, cabling and cable clips.

The alarm can be set to ring for any length of time during the day or night and a timed exit/entry delay ensures that the alarms are not sounded during normal exit and entry. Micro-Security claim that the kit is easy to install and operate. It comes complete with installation and operation instructions.

Contact: Micro-Security, P.O. Box 18, Havant, Hants PO9 3LB.

Dust free

Inmac have extended their range of dust covers for computers and peripherals. Covers for the Commodore range cost £8.50 each and give protection against damage caused by spills, food and dust. They contain anti-static additives which prevent static build-up, can be wiped clean and are made with heavy duty six layer vinyl.

Inmac advise that some insurance companies are now insisting on anti-static covers for equipment not in use.

Inmac are also selling packs of twenty standard floppy disks at prices starting from £36, which they claim is a 15% saving on their previous disk prices.

There are five types of ¼ inch disks shrink wrapped in boxes. Prices range from £36 for a single side, single density soft sector disks to £58 for dual side, quad density, soft sector disks.

Contact: Inmac (UK) Ltd, Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.

Griffin

Griffin Software have recently released three educational programs for the 64, each costing £8.99.

Wordspell is a spelling aid for children aged from five years upwards. It provides an introduction to the key rules of English spelling. Numberfun is made up of two programs for children aged six and upwards. Colourful graphics are used to teach traditional methods of addition and subtraction. The multiplication tables are taught in Tablesums. This program is divided into two parts and is aimed at six year olds.

Contact: Griffin Software, Frederick Street, Birmingham B1 3HT. Tel: 021 236 2552.

PRODUCT NEWS

Scope

ISP Marketing Ltd claim that their new program, Scope 64 will "revolutionise programming".

Scope 64 is full structurable language intended to handle graphics, sprites, colour, sound, music and animation. It contains 46 command words written in BASIC Rem statements. As far as possible the SCOPE words resemble their BASIC counterparts and all the instructions are compiled in machine code.

The program can be used by both inexperienced and competent programmers on the 64 and is accompanied by manual. It costs £17.95 on cassette or £19.95 on disk.

Purchasers of ISP utilities will be eligible to free membership of the "Scope Users Club". Its purpose is to keep members up-to-date with the latest news in programming and the provision of a telephone "Hot-line" will enable members to get help on programming problems.

Contact: ISP Marketing Ltd, Ryman House, Markham Street, London SW3. Tel: 01-351 5867.

Learning is fun

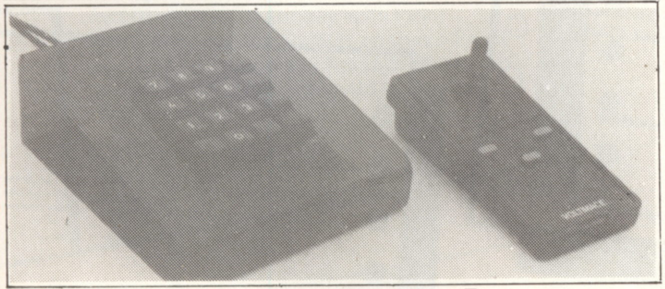
Intelligent Quest Software, a new division of the Avalon Hill Game Company, have released two new educational programs: Divex and ABC Caterpillar.

They are an American firm and at present neither of these programs are available in Britain.

Divex tests a child's knowledge of multiplication and division within the framework or a arcade game. Answering the questions correctly is the only way to play the game successfully. A cassette version priced at $16 (£10.60 approximately) will be available soon.

The ABC caterpillar will help children aged three to eight with their spelling. The child controls a bright green caterpillar and gobbles letters up in alphabetical order. The program is available for the VIC-20 priced at $16 and will soon be on cassette for the 64.

Contact: Intelligence Quest Software, 4517 Harford Road, Baltimore, MD 21214, USA. Tel: (301) 254 5300.



Datapad

Voltmace recently produced the Datapad 16, a 16-way programmable keypad for the 64 and the Delta 3SC joystick.

The keypad plugs into the two nine-way joystick sockets of the 64. A program on cassette accompanies the keypad, enabling the alphanumeric values of the keys to be selected. The keycaps supplied are numbered zero to nine. The datapad is set in a dark smoked acrylic frame and will cost £29.95.

Voltmace have also launched the Delta 3SC joystick, which is intended to be used while sitting in a chair rather than hunched over a table. It costs £10. The joystick has a ball and socket joint, rotary slide switches and offers a choice of three fire buttons.

Contact: Voltmace, Park Drive, Baldock, Herts. Tel: 0462 894410.

Bright Green

New company Bright Green Software have made their debut with Go Sprite, a sprite editor for the 64.

Managing Director, Stuart Bishop, creates his software with the principle of a "Rolls-Royce rather than a steamroller" and believes that programs should be "user friendly" if they are to be successful.

Go Sprite, the company claim, can be used by both beginners and experienced 64 users to control sprites and generate animation sequences. The program requires a joystick and costs £10.

Bright Green are currently developing a software "Lego" idea, enhancing several programs and will be releasing two games in the near future.

Contact: Bright Green Software, c/o Tigress Marketing Ltd, 127 Fawe Road, Putney, London SW15 2EG. Tel: 01 871 1136.

Music Writer

Music Writer from Commodore will enable any aspiring Andrew Lloyd Webbers to compose their own musicals on the VIC-20 (with 8K or 16K expansion). It retails at £4.99

The program converts the VIC-20 keyboard into a piano keyboard and up to three different voices can be used in composition – separately or together. The tempo and composition of completed tunes can be played back with additional special effects such as legato mode.

Music Writer is complemented by Music Composer, available on ROM cartridge for the 64, priced at £9.99.

Music can be composed using the computer keyboard and then played back. The tunes can be changed and manipulated to give a wide variety of different effects. Special effects include waveform, filtering and vibrato.

Basic

Clive Prigmore's Beginners Basic's has just been released and costs £9.95. It is intended to teach beginners the principles of programming in Basic and can be used with the 74.

Techniques and ideas are introduced with worked examples and exercises. Advanced concepts are also tackled and instructions are included on how to program for business, games and home education.

Contact: WHS Distributors, St John's House, East Street, Leicester.

The key to security

Microdeal claim to have designed the perfect solution to foil software pirates – the Microdeal Software Key.

Chas Robertson of Northern Software Consultants, after months of research, finally produced a dongle which has circuits embedded in rock-hard plastic resin. It is claimed to be virtually uncopyable and when plugged into the joystick port will generate a combination of signals specific to each game from Microdeal's range of Tom Mix games.

The dongle does not prevent back-up copies of the game being made, but does prevent them being played without it. Microdeal are incorporating each of the keys in their Tom Mix games (both cassette and disk versions) with no increase in price Snackman for the VIC-20 is part of the new Tom Mix labels and costs £8 on cassette and £9.95 on disk.

Other recently released games from Microdeal include Arena 300, Cuthbert in Space, Cuthbert goes Walkabout, Cuthbert in the Jungle, Danger Ranger, Grabber and Pengon.

Contact: Microdeal Ltd, 41 Truro Road, St Austell, Cornwall PL25 5JE. Tel: 0726 3456.

Gemini

More Programs

THE COMPLETE CASH

Business Software

Gemini
Serious Software
Cashbook

INTRODUCTION

Designed for the small to medium sized business, whether a sole trader, partnership, or limited company these programs need a Commodore 64 Microcomputer (CBM 64), an 80 or 132 column printer, and cassette or disk storage.

Each has been specially written to use the computer's huge memory and is a 'stand alone' program. However the Cash Book and Final Accounts programs also interface, to produce a superb combination pack for really serious business users, as well as practising accountants.

Each program is supported by a comprehensive, easily followed manual, and 'user friendly' screen prompts with error trapping routines, which make a specialised knowledge of accountancy unnecessary for the average user. The software is, however, capable of advanced accounting use, and in order to fully appreciate and interpret the Balance Sheet a discussion with your professional adviser or Bank Manager may be advisable.

We confidently recommend these programs to serious commercial owners of the CBM64, and hope they will enable you to operate your business on a more effective, efficient and profitable basis.

David A. Perkins BA, ACA, ATII
Director of Gemini Marketing Ltd. and partner in Perkins & Gingell, Chartered Accountants.

David J. Gingell MA (Oxon),ACA
Director of Gemini Marketing Ltd. and partner in Perkins & Gingell, Chartered Accountants

Malcolm Brook FCA
Chairman of Gemini Marketing Ltd., Business Consultant and Underwriting Member of Lloyds

Peter S. Meherne MIAP
Associate Director of Gemini Marketing Ltd. In charge of Programming

VAT FILE

Whilst this program will benefit most VAT registered businesses, it is also designed for those users who are on one of the special retailers schemes for VAT, which requires them to analyse their expenditure invoices over the various rates of VAT, in order to calculate their VAT output tax. The program will provide the following:

1. A means of recording invoices.
2. A printed copy of all invoice details.
3. Accumulated totals of different types of transactions.
4. The facility for coping with a multi-rated VAT system.
5. Information needed for the preparation of VAT returns.
6. The facility to sort and print transactions by date, invoice reference or customer/supplier name.

The package is capable of dealing with up to 100 transactions in a single batch and the different transaction types are processed in separate batches, which are then printed out as a permanent record. Cumulative totals for gross takings, VAT at standard rate etc. are stored in a data file on disk or tape which can be loaded at the start of every session to provide 'brought forward' totals for the program.

Cassette C.0813 £19.95
Disk D.0813 £24.95

Combination Packs

Designed to offer maximum value and convenience to serious business users, by combining several programs in one handy pack, together with their appropriate manuals.

Combination Business Pack No. 1
Contains: Cash Book (including VAT file), and Final Accounts

	Normal List Price of Programs in Pack	Combination Pack Price	SAVING...
C.0818 Cassette	£119.90	£89.95	£29.95
D.0818 Disk	£129.90	£99.95	£29.95

Combination Business Pack No. 2 Contains: Cash Book (including VAT file), Final Accounts, Database, Stock Control and Mailist.

	Normal List Price of Programs in Pack	Combination Pack Price	SAVING...
C.0819 Cassette	£179.75	£139.95	£39.80
D.0819 Disk	£204.75	£159.95	£44.80

Just a few of the many reports produced by the Cash Book Accounting System

```
Jones of Plymouth
..........................................................
                         BALANCE SHEET AT 12/12/84
..........................................................

                                   NOTE     1984      1983
                                            £         £

Fixed Assets                        1        891       738
                                           ______    ______

CURRENT ASSETS                              5075      2194
Stock & WIP                                 3704      4513
Debtors & Prepayments                      ______    ______
                                            8779      6707
                                           ______    ______

CURRENT LIABILITIES                         1742      1495
Creditors & Accruals                        6661      7093
Bank (1)                                   ______    ______
                                            8403      8588
                                           ______    ______

NET CURRENT ASSETS/(LIABILITIES)             376     (1881)
                                           ______    ______

NET ASSETS/(LIABILITIES)                 £  1267     (1143)
                                           ======    ======

REPRESENTED BY:
CAPITAL ACCOUNTS                    2
Capital Account (1)                       ( 1020)    (2195)
Capital Account (2)                         2287      1052
                                           ______    ______
                                         £  1267     (1143)
                                           ======    ======
```

...More Programs ...More Programs...

BOOK ACCOUNTING SYSTEM FOR YOUR COMMODORE 64!

CASH BOOK (includes VAT file program 0813)

This is a program of enormous scope which allows the CBM64 to be used as a powerful business tool, taking the drudgery out of book keeping, and producing accurate and comprehensive management information.

In its simplest form the program will replace your Cash and Petty Cash books BUT Gemini's program, in effect, does much more. In addition to recording cash and bank transactions, the program will allow you to enter credit sales and purchases, and for all of these entries it will automatically complete the double entry routines, to ensure that your records are always in balance.

Sales and Purchase ledger control accounts are included, which makes the program ideal for integration with an existing manual sales or purchase ledger system.

The program also includes the following features:

1. Balance at Bank for up to 5 separate Bank Accounts.
2. Petty Cash in hand for up to 3 separate Cash Accounts.
3. A listing of all nominal account titles (maximum 199), most of which are user definable).
4. Monthly transaction summaries and departmental analyses of sales and purchases.
5. VAT memo account balances (sales/net purchases), and VAT accounts
6. Batch printouts of all transactions entered in current program run.
7. Total debtors and creditors, sales, overheads and Trial Balance.

The program is therefore a complete 'stand alone' accounting software package, ideal for both business users, and practising Chartered Accountants, since an infinite number of different Cash Books may be kept on a single CBM64.

A full audit trail of all data entered in the program is produced and a journal entry routine is incorporated to facilitate adjustments to individual nominal accounts, prior to producing a final Trial Balance. The latter interfaces automatically with Final Accounts program C.0806, so that a Profit and Loss Account and Balance Sheet can be prepared from data held in the Cash Book program.

Cassette C.0805 £59.95
Disk D.0805 £64.95

FINAL ACCOUNTS

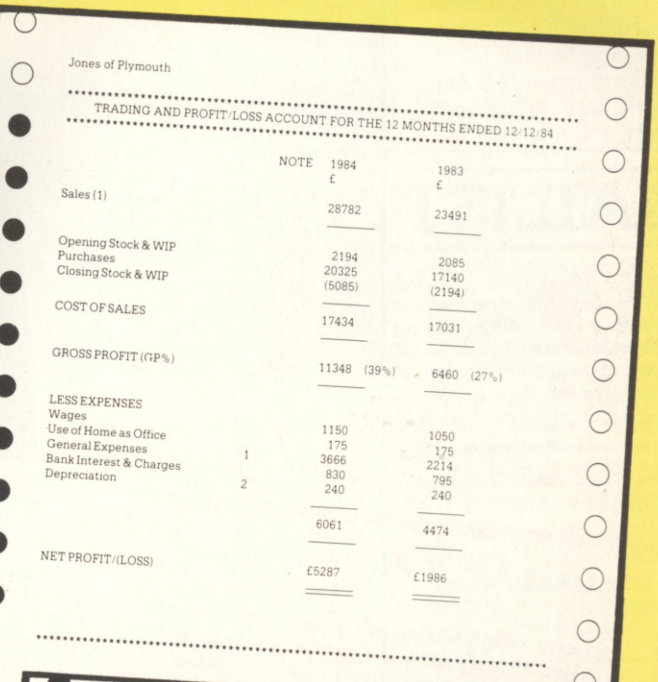
This program is designed to produce a Trading and Profit & Loss Account and Balance Sheet, either from the final Trial Balance produced by Cash Book program 0813 or from any other Trial Balance making it a truly stand alone 'Final Accounts' program.

The facility to produce these documents quickly, accurately, and regularly is of enormous help in running any business, large or small, since one shows the true profitability achieved, and the other the exact strength of the business in terms of assets and liabilities.

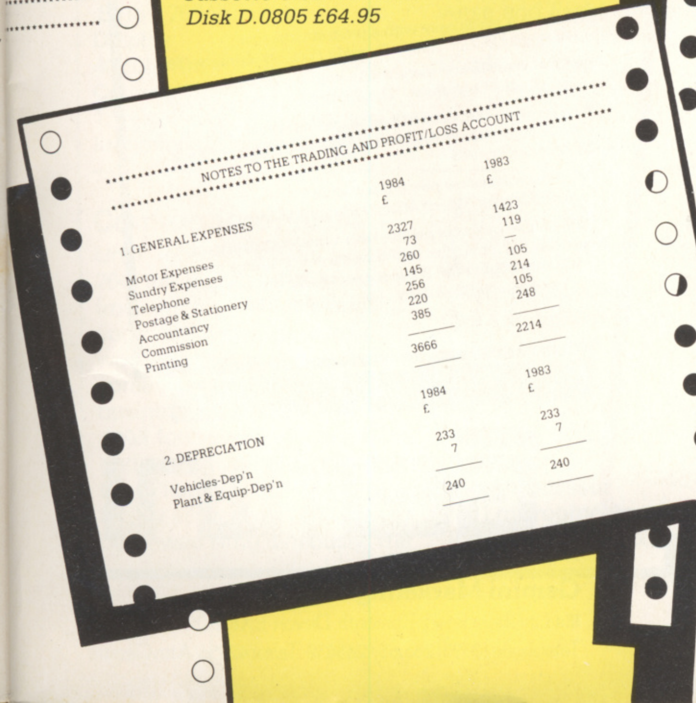
The program also allows insertion of budget or comparative figures which can be shown alongside the actual figures, together with notes to the accounts, and the opening Trial Balance for the following period.

Whether used by businessman or practising Accountants, this program allows the CBM64 to be used as a real business computer producing vital information for decision makers with enormous ease and accuracy.

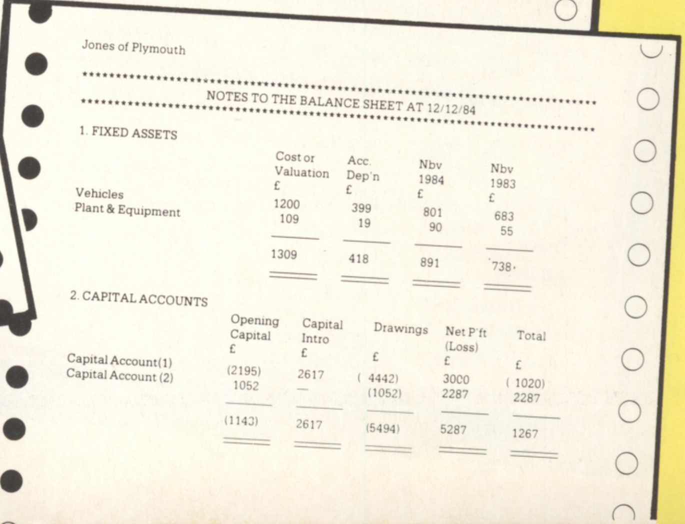
Cassette C.0806 £59.95 Disk D.0806 £64.95



```
Jones of Plymouth

****************************************************************
  TRADING AND PROFIT/LOSS ACCOUNT FOR THE 12 MONTHS ENDED 12/12/84
****************************************************************

                              NOTE   1984          1983
                                     £             £
Sales (1)
                                     28782         23491
                                     _____         _____
Opening Stock & WIP
Purchases                             2194          2085
Closing Stock & WIP                  20325         17140
                                     (5085)        (2194)
                                     _____         _____
COST OF SALES
                                     17434         17031
                                     _____         _____
GROSS PROFIT (GP%)
                                     11348 (39%)    6460 (27%)
                                     _____         _____
LESS EXPENSES
Wages
Use of Home as Office                 1150          1050
General Expenses                       175           175
Bank Interest & Charges         1     3666          2214
Depreciation                           830           795
                                2      240           240
                                     _____         _____
                                      6061          4474
                                     _____         _____
NET PROFIT/(LOSS)
                                     £5287         £1986
                                     =====         =====

****************************************************************
```



```
*******************************************************
          NOTES TO THE TRADING AND PROFIT/LOSS ACCOUNT
*******************************************************
                                  1984        1983
                                  £           £
                                              1423
1. GENERAL EXPENSES               2327         119
                                    73          —
Motor Expenses                     260         105
Sundry Expenses                    145         214
Telephone                          256         105
Postage & Stationery               220         248
Accountancy                        385        _____
Commission                        _____       2214
Printing                          3666        _____
                                  _____
                                              1983
                                  1984        £
                                  £
                                               233
2. DEPRECIATION                    233           7
                                     7        _____
Vehicles-Dep'n                    _____        240
Plant & Equip-Dep'n                240        _____
                                  _____
```



```
Jones of Plymouth

****************************************************************
        NOTES TO THE BALANCE SHEET AT 12/12/84
****************************************************************
1. FIXED ASSETS

                         Cost or     Acc.      Nbv       Nbv
                         Valuation   Dep'n     1984      1983
                         £           £         £         £
Vehicles                 1200        399       801       683
Plant & Equipment         109         19        90        55
                         _____       _____     _____     _____
                         1309        418       891       738
                         =====       =====     =====     =====

2. CAPITAL ACCOUNTS

                    Opening   Capital              Net P'ft   Total
                    Capital   Intro     Drawings   (Loss)
                    £         £         £          £          £
Capital Account(1)  (2195)    2617      ( 4442)    3000       ( 1020)
Capital Account (2)  1052     —         (1052)     2287       2287
                    _____     _____     _____      _____      _____
                    (1143)    2617      (5494)     5287       1267
                    =====     =====     =====      =====      =====
```

...More Programs from Gemini

...FOR YOUR COMMODORE 64.

STOCK CONTROL

A superb program which makes extensive use of machine code to optimise the use of the computer's memory and greatly improve speed.

Up to 220 stock records may be held on each file with details including stock reference code, description, supplier name, quantity in stock, cost price, sale price, etc.

The program includes the facility to add/modify/delete records, sort, search, enter stock in or out, or produce a stock summary. Several printout routines are available, and a financial summary may be produced giving the total of your stock holding (cost and sale value), the gross profit margin and the replacement cost of bringing understocked items up to minimum stock levels.

This program will take much of the tedium out of stock control and save time and money.

Cassette C.0802 £19.95   Disk D.0802 £24.95

TYPICAL STOCK CONTROL REPORTS

```
*************************************************************
REC  STOCK NO.  DESCRIPTION           UNIT QTY   NO. IN    COST    SELL
--------------------------------------------------------------------
1    62—117     CALCULATOR (TI-54)    SINGLE       5.00   13.02   26.04
2    20—237     CALCULATOR (TI-59)    SINGLE       0.00   70.00  130.39
3    54—827     CODING CARDS          3           10.00    0.75    1.51
4    19—857     PRINTER CRADLE        SINGLE       1.00   82.56  165.17
5    67—374     MEMORY MODULE         SINGLE       5.00    9.56   18.77
6    12—867     SOLVENT CLEANER       320ML       10.00    0.73    1.34
--------------------------------------------------------------------
               RECORD NO. 1                          RECORD NO. 2
--------------------------------------------------------------------
STOCK NUMBER:    62—117               STOCK NUMBER:    20—237
DESCRIPTION:     CALCULATOR (TI-54)   DESCRIPTION:     CALCULATOR (TI-59)
UNIT QUANTITY:   SINGLE               UNIT QUANTITY:   SINGLE
QTY. IN STOCK:    5.00                QTY. IN STOCK:     0.00
COST PER UNIT:   13.02                COST PER UNIT:    70.00
SELL PER UNIT:   26.04                SELL PER UNIT:   130.39
MINIMUM STOCK:    2.00                MINIMUM STOCK:     1.00
RE-ORDER QTY:     5.00                RE-ORDER QTY:      2.00
SUPPLIER NAME:   TEXAS INSTRUMENTS    SUPPLIER NAME:   TEXAS INSTRUMENTS
```

MAILIST

A dedicated database to allow for manipulations of names and addresses and other data. Gemini's unique 'searchkey' system gives you a further ten 'user-defined parameters' to make your own selections. Features include the facility to find a name or detail when only part of the detail is known, and to print labels in a variety of user specified formats.

Cassette C.0811 £19.95   Disk D.0811 £24.95

Gemini products are distributed by:
Computer Bookshop, Micro Dealer UK Ltd, Diamond Stylus PLC, Tiger Distribution, Wonderbridge Ltd, Ferranti & Davenport, Everyman Computers (NI), Websters Ltd, Lightning Records and Pilonmist Ltd.

DATABASE

The No.1 menu driven, user friendly multi purpose Data Management system with the following features: Dynamic Memory management which allows the huge potential of the 64's memory to be fully used... Search and calculate facility which permits numeric field calculations to be updated by any common arithmetic factor... Searches on multiple selection criteria and high precision sorting... Professional standard record verification prior to entry for greater accuracy.

Cassette C.0801 £19.95   Disk D.0807 £24.95

HOME ACCOUNTS

A really excellent rewrite for the 64 of Gemini's famous program for the BBC Micro — now enhanced with extra features... Budget for all aspects of household and personal expenditure for each month of the year, and then record and compare actual expenditure as it happens... Complete interactive bank account database with the ability to automate standing order debits... Credit cards supported... Full printer options... Graphic plotting facility to display levels and trends of expenses, at a glance... Highly recommended for putting your 64 to serious work!

Cassette C.0807 £19.95   Disk D.0807 £24.95

Coming later in 1984: Spreadsheet Analysis and Graph Plot programs.

Three Reasons for Choosing Gemini

1. Our serious software for the BBC Micro was developed in 1982/83 and has earned an enviable reputation... see the independent press comments below.
2. All Gemini's knowledge and experience have been used to produce their 1984 Commodore 64 programs... which in certain cases are superior to their BBC Micro counterparts, due to the CBM 64's greater memory.
3. Invaluable software support is available... normally this service is offered only with software costing many times the Gemini price.

Independent Press Comments on Gemini's BBC Micro Programs.

"Stocktaking is made easy with a program like this"
Gemini Stock Control 'Jersey Evening Post', 17 January 1984

"Remarkable Software, friendly and well designed, a pleasure to use" *Gemini Cash Book, 'The Scotsman', 12 October 1983*

"Well documented, easy to load, excellent screen display"
Gemini Spreadsheet Analysis, 'Home Computing Weekly' 27 September 1983

"A very professional piece of software"
Gemini Mailist 'Which Micro' February 1983

"Will enable business people with a moderate grasp of accounting principles to produce a set of figures that will satisfy both the Bank Manager and the Tax man"
Gemini Cash Book 'Micro User' August 1983

AVAILABLE FROM:

Larger branches of Boots and W.H. Smith and most good software dealers... or phone Gemini for immediate despatch quoting your Access, Visa or American Express card number. Telephone (0395) 265165/265832. Alternatively make your cheque or Postal Order payable to Gemini Marketing Ltd., and send to Gemini Marketing Ltd., 18a Littleham Road, Exmouth, Devon EX8 2QG.

CCI

Please send urgently Cassette(s)/Disk(s) (please delete) ....

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....

....

Prices stated include VAT and Post and Packing (UK only).

Name ....

Address ....

....

Signature ....

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Gemini Marketing Limited
18a Littleham Road Exmouth Devon EX8 2QG England
Telephone (0395) 265165/265832 Telex 42956 Attn Gemini

SHOW REPORT

CBM – new models

The new Commodore 16 and Plus/4 computers were the major attraction at the 5th International Commodore Show held in June at London's Novotel. Over the three days of the exhibition 15,200 people viewed new products and games and took part in competitions. For those of you who couldn't attend, here is a round-up of new products launched at the show

Commodore 16

The Commodore 16, designed for the first-time user, is offered as a starter pack comprising the computer, cassette unit, Introduction to BASIC Part 1 and four recreational programs – all for £129.99.

Featuring the full-size keyboard of the 64, the Commodore 16 is finished in charcoal grey.

Technical Specifications:

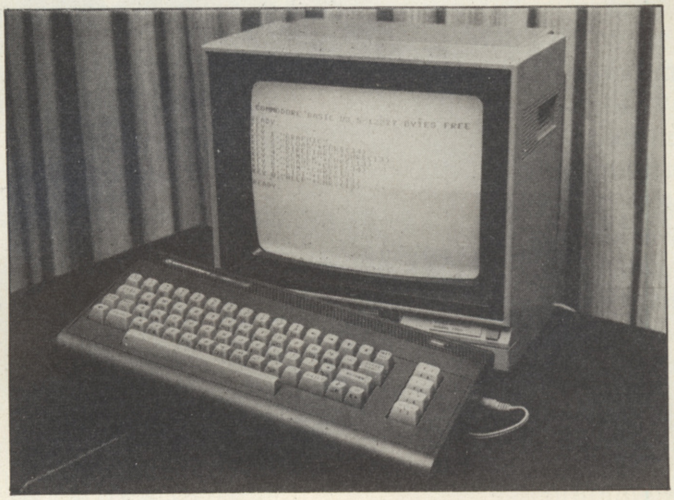
Memory
16K RAM Standard – 12K RAM user accessible for BASIC programs

ROM
32K ROM Standard (includes operating system and BASIC interpreter)

Microprocessor
7501 Microprocessor
.89 to 1.76 MHz clock

Display
40 columns × 25 lines of text

Colours
121 colours (15 colours: 8 luminance levels + black



Characters
Upper and lower case letters, numerals and symbols. Reverse and flashing characters. All PET graphic characters.

Display modes
Text characters. High resolution graphics/multi-colour graphics. Split screen text/high resolution graphics or multi-colour.

Resolution
320 × 200 Pixels

Sound
2 Tone generators or 1 Tone and 1 white noise generator

Volume
9 volume levels

Keyboard
Full size/full stroke design

Keys
66 keys total. 4 cursor control keys. 4 programmed (reprogrammable) function keys (up to 8 user defined functions possible). Colour control keys. HELP key. Upper and lower case character set. Graphics character set.

Inputs/outputs
Commodore 16 user port. Commodore serial port. ROM cartridge and parallel disk drive port. 2 joystick ports. Commodore 1531 cassette unit interface port. Monitor output – composite/chrominance/luminance. Audio input/output. Power supply input.

Features
Built-in BASIC 3.5 – over 75 commands including built-in graphics and sound commands. Built-in Machine Language Monitor with 12 commands. Screen Window capability.

Commodore Plus/4

Until recently known as the 264, the Plus/4 takes its name from the four integral applications software packages: a word processor, an electronic spreadsheet, a database and a business graphics package.

All four packages can share and exchange information and the Plus/4's screen window facility allows two packages to be viewed simultaneously. The Plus/4 costs £249

Technical specifications:

Memory
64K RAM Standard – 60K RAM user accessible for BASIC programs

ROM
32K ROM Standard (includes operating system and BASIC interpreter)

Microprocessor
7501 microprocessor
.89 to 1.76 MHz clock

Display
40 columns × 25 lines of text

Colours
121 colours (15 colours: 8 luminance levels + black)

Characters
Upper and lower case letters, numerals and symbols. Reverse and flashing characters. All PET graphic characters.

Display modes
Text characters. High resolution graphics/multi-colour graphics. Split screen text/high resolution graphics or multi-colour

Resolution
320 × 200 Pixels

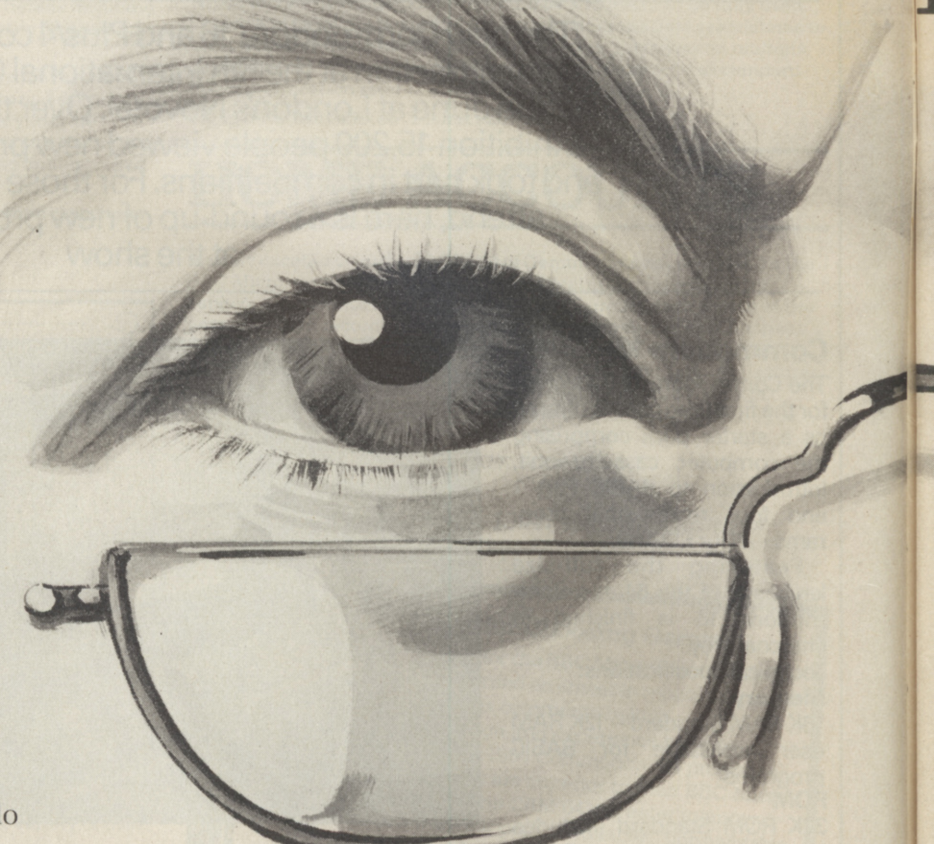
Sound
2 tone generators or 1 tone and 1 white noise generator

Volume
9 volume levels

Keyboard
Full size/full stroke design

Keys

Consider our s
professional



If you ever have to bring work home from the office you can now tackle it in a fraction of the time, thanks to our range of software.

With these inexpensive new programs you can turn a Commodore 64 personal computer into a fully-fledged business tool to improve the smooth operation of your calculations, filing and ordering or information storage.

All the programs are easy to learn and use, and all cost less than £50.

There's no more cost effective way to turn your home computer to practical use.

Practicalc 64. The complete spreadsheet for Commodore 64.

With this program your cashflow will do just that.

Flow.

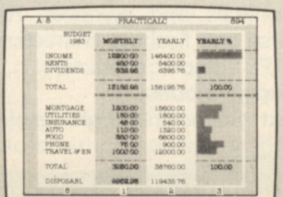
Practicalc 64 accepts both numerical and alphabetical entries and allows you to work out sales forecasts, long-term budgets, sales models or long term cash plans.

All in a fraction of the time they normally take.

Practicalc 64 has 2000 cells, more than 20 mathematical functions, (including logarithms and roots), can insert or delete rows or columns, can 'SORT' information alpha-numerically and has a 'SEEK' function to search for specific information.

It can even display the information in graph form to allow a quick visual appraisal of the situation. Disc £44.50 (Tape £39.95).

Over 20 mathematical functions. Column width up to 38 characters 2000 cells. Graph function.



```
A B              PRACTICALC                  894
      BUDGET
        1983    MONTHLY     YEARLY     YEARLY %

   INCOME       12200.00   146400.00
   RENTS          450.00     5400.00
   DIVIDENDS      532.98     6395.76

   TOTAL        13182.98   158195.76     100.00

   MORTGAGE      1300.00    15600.00
   UTILITIES      150.00     1800.00
   INSURANCE       45.00      540.00
   AUTO           110.00     1320.00
   FOOD           550.00     6600.00
   PHONE           75.00      900.00
   TRAVEL & EN   1000.00    12000.00

   TOTAL         3230.00    38760.00     100.00

   DISPOSABL     9952.98   119435.76
         B          1          2           3
```

Practifile 64. The database for Commodore 64.

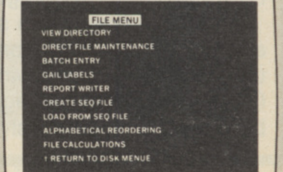
Practifile means an end to bulky and time-consuming storage of files, client or patient information or names and addresses.

And it means you'll no longer have to spend minutes or hours searching through piles of paper for a specific piece of information.

Each file on the program is able to handle 3,800 record entries, and Practifile can sort the files it contains by number or letter in less than a second.

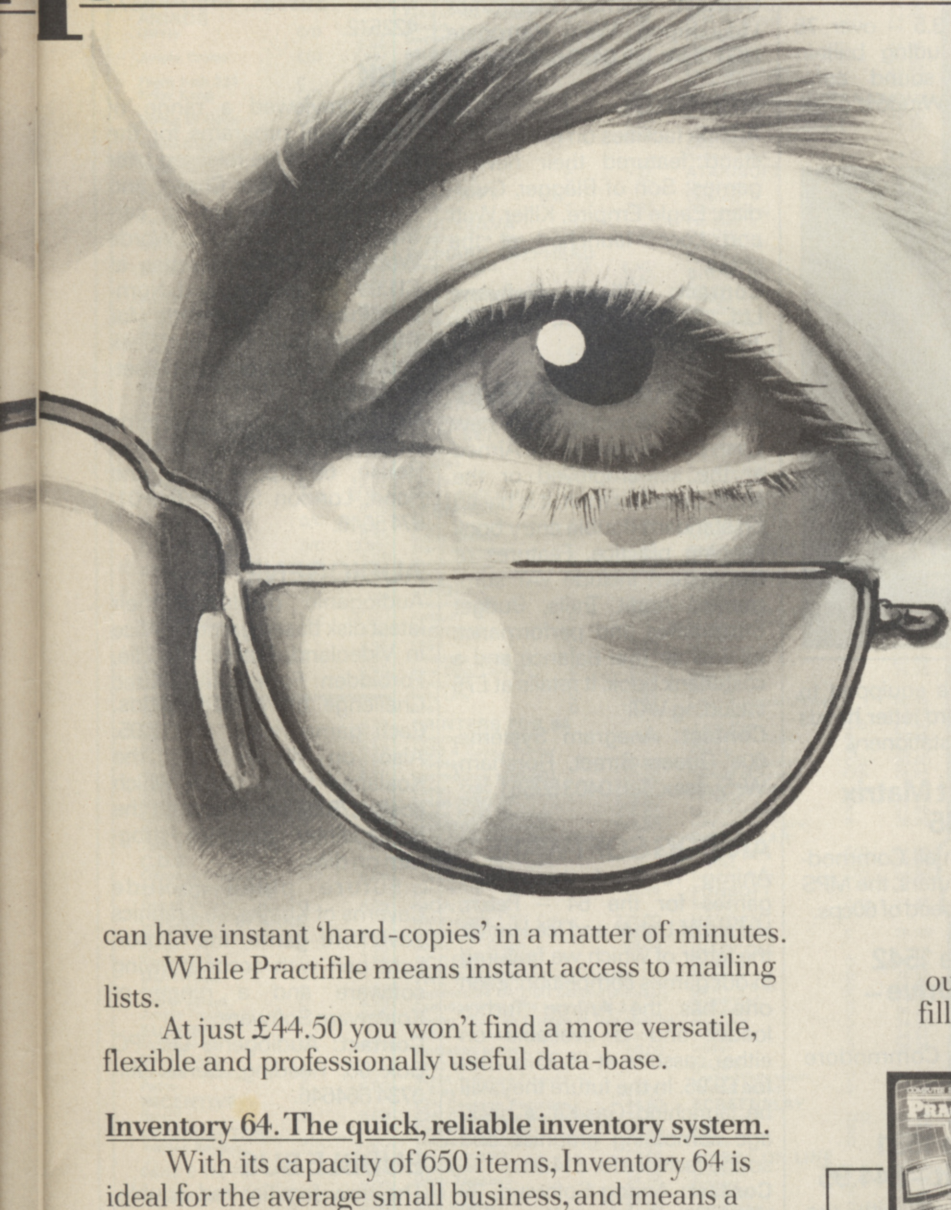
The system is so flexible that you can add, subtract, multiply or divide within individual files, while its use with a word-processing system means that you

Sorts files by number or letter in less than one second. Fully compatible with Practicalc 64.



```
FILE MENU
VIEW DIRECTORY
DIRECT FILE MAINTENANCE
BATCH ENTRY
GAIL LABELS
REPORT WRITER
CREATE SEQ FILE
LOAD FROM SEQ FILE
ALPHABETICAL REORDERING
FILE CALCULATIONS
↑ RETURN TO DISK MENUE
```

software from a point of view.



can have instant 'hard-copies' in a matter of minutes.

While Practifile means instant access to mailing lists.

At just £44.50 you won't find a more versatile, flexible and professionally useful data-base.

Inventory 64. The quick, reliable inventory system.

With its capacity of 650 items, Inventory 64 is ideal for the average small business, and means a vast improvement in the efficiency of good stock control.

All you have to do is to enter each item, followed by the information which the program will prompt.

That means things like part number, description, location, stock, year-to-date sales, re-order date, minimum quantity, vendor, list price and other important facts.

From this information your personal computer, with the help of Inventory 64, will be able to collate and assess the major points of an efficient system and be able to present you with a complete and instantaneous view of current stock situations.

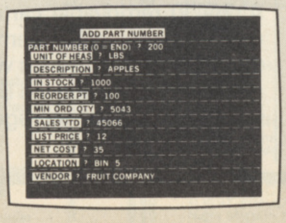
And ensure that stock control problems really are a thing of the past.

Pretty good value at just £29.95.

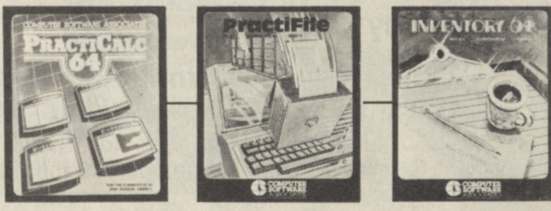
You'll find our superb range of Commodore 64 software for professional and business use in all good computer stores including selected branches of Boots, W. H. Smith, Menzies and Laskys.

If you'd like more information about our software or require any technical help fill in the coupon or phone us on 0473 462721.

Handles up to 650 parts. The quick answer to stock control problems.



```
          ADD PART NUMBER
PART NUMBER (0 = END) ? 200
UNIT OF MEAS ? LBS
DESCRIPTION ? APPLES
IN STOCK ? 1000
REORDER PT ? 100
MIN ORD QTY ? 5043
SALES YTD ? 45066
LIST PRICE ? 12
NET COST ? 35
LOCATION ? BIN 5
VENDOR ? FRUIT COMPANY
```


COMPUTER SOFTWARE ASSOCIATES
PRACTICALC 64
PractiFile
INVENTORY 64
COMPUTER SOFTWARE ASSOCIATES
COMPUTER SOFTWARE ASSOCIATES

Name ____________________

Address ____________________

CCI 7/84

PRACTICORP

Goddard Road, Whitehouse Industrial Estate, Ipswich IP1 5NP. Tel: 0473 462721

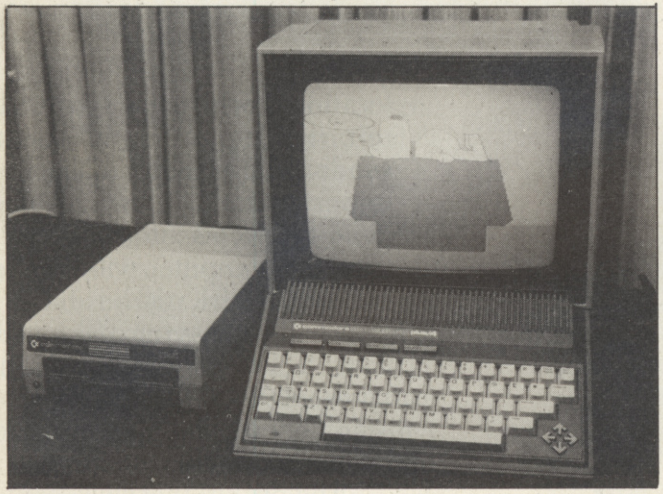
67 keys total. 4 cursor control keys. 4 programmed (reprogrammable) function keys (up to 8 user defined functions possible). Colour control keys. HELP key. Upper and lower case character set. Graphics character set. Reset button. Escape key

Inputs/outputs

User port. Commodore serial port. ROM cartridge and parallel disk drive port. 2 joystick ports. Commodore 1531 cassette unit interface port. monitor output – composit/chrominance/luminance. Audio input/output. Power supply input

Features

Built-in BASIC 3.5 – over 75 commands including built-in graphics and sound commands. Screen Window capability



With the launch of the two new Commodore computers comes a new range of compatible peripherals, most of which are also compatible with the VIC-20, CBM 64 and SX-64:

MC8 801 Dot Matrix Colour Printer – £399.99

Ideal for the production of graphs and charts, this 38cps model is capable of printing up to seven colours.

DPS 1101 Daisy Wheel Printer – £399.99

A bi-directional letter quality daisy wheel model with a print speed of 18cps. A full range of alternative typefaces are offered and it is equipped to use both standard letter heads and continuous stationery.

MPS 802 Dot Matrix printer – £345

Compatible with all Commodore home computers, the MPS 802 has a print speed of 60cps.

Commodore 1542 Single Disk Drive – £229

Replaces the Commodore 1541.

Commodore 1531 Cassette Unit – £44.95

Designed for use with the Commodore 16 and Plus/4.

ADCOMP

Adcomps's latest product, the X100S intelligent plotter has built-in plot routines, two Z80 processors, a large 20 Kbyte memory and can print extremely precise drawings and curves in four different colours – black, red, green and blue. It retails at £1,060.

Other features include an operating system, bi-directional printing and automatic output of linear and logarithmic axis.

Contact: Adcomp UK Ltd, 56 Long Street, Dursley, Glos. Tel: 0453 46065.

ADMAN

'Hello' said the 64 on Adman's stand – the new 64 speech synthesiser was going through its paces. Adman also revealed that they are no longer producing the VIC-20 version.

Contact: Adman Electronics Ltd., Ripon Way, Harrogate HG1 2UA. Tel: 0423 62642.

ALLIGATA

Arcade facilities on the Alligata stand featured their newest games: Son of Blagger, Guardian, Eagle Empire, Killer Watt and Loco, launched at the show.

Contact: Alligata Software Ltd., 178 West Street, Sheffield. Tel: 0742 61318.

ANAGRAM SYSTEMS

Anagram launched their new Cash Book 64 program. Aimed at the self-employed or the small business man, it is based on standard double entry book keeping practice. Features of the system include VAT summaries, Audit Trails, Budget Summaries and performance as well as Trial Balance and a cash/bank book. It retails at £75 including VAT.

Contact: Anagram Systems, 60a Queen Street, Horsham, W. Sussex. Tel: 0403 59551.

ANIROG SOFTWARE

Anirog released three new games for the 64 – Petch, House of Usher and Ice Hunter the latter of which we featured in our games compeition. Each one has the Anirog Turboloader and is available on either cassette at £6.95 or disk for £9.95. In the future they will be launching Gas-Kit, a package combining graphics and sound facilities for £14.95.

Contact: Anirog Software, 29 West Hill, Dartford, Kent. Tel: 0322 92518.

APSTOR

Apstor introduced two hard disk systems at the show: the Alpha 10 removable cartridge mass-storage subsystem on the 8000 and 700 series which retails at £3,600, and the Beta 5 with 5+5 Mb of storage for £2,995.

APS are also planning to introduce two other systems, the Gamma 20+20 and the Delta 5+5, costing £3,600 and £1,400 repectively.

Contact: APS Microsystems Ltd, 2-8 Foredown Drive, Portslade, Sussex. Tel: 0273 422512.

ASK

ASK previewed a range of educational programs for the 64 which will be released later this year. Number Chaser and Number Painter are on cartridge for £9.99; Words Words Words on three cassettes at £11.99; Facemaker and Number Puzzler on cassette for £4.99 and finally Hide and Seek and Lets Count on two cassettes for 9.99.

Contact: Applied Systems Knowledge Ltd, London House, 68 Upper Richmond Road, London SW15. Tel: 01-874 6046.

AUDIOGENIC

Audiogenic displayed their latest disk based games – Alice in Videoland, Frantic Freddie, Forbidden Forest and Aztec Challenge on arcade stands. Each game retails at £12.95. Also on display was the Koalapad touch tablet which costs £79.95 together with the Koalapainter graphics program on disk.

Future plans include Caverns of Khafka – a graphics adventure game, the Gibson light pen with accompanying software and a range of Koalaware Software.

Contact: Audiogenic Ltd, PO Box 88, Reading, Berks. Tel: 0734 664646.

BUBBLE BUS

The now familiar red double-decker bus housed the latest range of games from Bubble Bus. They previewed several games – Easydesign 64, a program designed to teach the Sign language and Strike Force featuring a powerful laser cannon, helicopters and fighter jets.

Future plans include an adventure graphics game and Quadrillon, a disk incorporat-

Computerama 64

the source

ALLIGATA		
Blagger	C	7.95
Guardian	C	7.95
Loco	C	7.95
Panic Planet	C	7.95
Son Of Blagger	C	7.95
A&F		
Chuckie Egg	C	7.90
ADVENTURE INTERNATIONAL		
Pirate Cove	C	9.90
Voodoo Castle	C	9.90
ANIROG		
Galaxy	C/D	7.95/ 9.95
Jungle Drums	C/D	7.95/ 9.95
Flight Path 737	C	7.95
Krazy Kong	C/D	7.95/ 9.95
House Of Usher	C/D	6.95/ 9.95
Moon-Buggy	C/D	7.95/ 9.95
Skramble	C/D	7.95/ 9.95
Cybotron	C/D	7.95/ 9.95
Petch	C/D	6.95/ 9.95
Ice Hunter	C/D	6.95/ 9.95
Zodiac	C/D	7.95/ 9.95
AUDIOGENIC		
Motor Mania	C	8.95
Bonzo	C	8.95
Burnin Rubber	C	8.95
Pegasis	D	12.95
Frantic Freddie	D	12.95
Grand Master Chess	C	8.95
Alice In Video Land	D	12.95
AVS		
System 1500	C	12.95
U.S. GOLD		
Forbidden Forest	D/C	12.95/ 8.95
Caverns Of Khafka	D	12.95
Aztec Challenge	D/C	12.95/ 8.95
Slinky	D/C	12.95/ 8.95
Pooyan	D/C	12.95/ 9.95
O'Rileys Mine	D/C	12.95/ 9.95
Beach-Head	D/C	12.95/ 9.95
Solo Flight	D/C	12.95/ 9.95
Gustbuster	C	9.95
Quest For Quintana Roo	C	9.95
Rolloverture	C	9.95
Dallas Quest	C	9.95
BUBBLE BUSS		
Hustler	C	6.99
Kick-Off	C	6.99
Widows Revenge	C	6.99
Flying Feathers	C	6.99
Bumpin Buggies	C	6.99
BIG G		
Meggahawk	C	6.95
Zylogon	C	6.95
BUG-BYTE		
Twin Kingdom Valley	C	9.95
C.D.S.		
Colossus Chess 2.0	C/D	9.95
C P SOFTWARE		
Pinball Wizard	C	6.95
CREATIVE SPARKS		
Black Hawk	C	7.95
Slurpy	C	7.95
Tower Of Evil	C	7.95
DURRELL		
Scuba Dive	C	6.95
Harrier Attack	C	6.95
Jungle Trouble	C	6.95
EUROBYTE		
Mr Mephisto	C	6.95
IMAGINE		
Cosmic Cruiser	C	5.50
Pedro	C	6.90
INCENTIVE		
Splat!!	C	6.50
INTERCEPTOR		
Arabian Knights	C/D	7.00/ 9.00
Spider & The Fly	C/D	7.00/ 9.00
China Miner	C/D	7.00/ 9.00
Wheelin Wallie	C/D	7.00/ 9.00
Burger Time	C/D	7.00/ 9.00
Aquanaut	C/D	7.00/ 9.00
Wallie Goes To Rhymeland	C/D	7.00/ 9.00
ISP		
Scope	C/D	17.95/ 18.95
K-TEL		
City Attack	C	6.95
It's Only Rock-n-Roll	C	6.95
LLAMASOFT		
Hovver Bovver	C	7.50
Mutant Camels	C	7.50
Mutant Camels Revenge	C	7.50
Sheep In Space	C	7.50
LIVEWIRE		
Grid Trap 64	C	7.95
Jumping Jack 64	C	7.95
Triad	C	7.95
MERLIN		
Crazy Caveman	C	7.95
Blue Moon	C	7.95
Pixie Pete	C	7.95
Orange Squash	C	7.95
MELBOURNE HOUSE		
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PRINTERS FOR 64		
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Assembler Dev'lopment	D	24.95
Programmers Utilities	D	14.95
Petspeed 64	D	49.95
Simons Basic	R	44.95
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Pinball Spectacular	R	9.99
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Omega Race	R	9.95

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Templates For Magpie	D	29.95
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Diskey	D	36.00
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Drol	D	25.95
Lode Runner	D/R	24.95/29.95
DATAMOST		
Aztec	D	28.95
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Contact: Bubble Bus Software, 87 High Street, Tonbridge, Kent. Tel: 0732 355962.

GRANADA PUBLISHING

A number of books for both the 64 and VIC-20 were introduced including 'Get more from the VIC-20' by Owen Bishop and 'Business Systems' on the Commodore 64.
Contact: Granada Publishing, 8 Grafton Street, London W1. Tel: 01-493 7070.

HANDIC SOFTWARE

Two new software products and a new expansion unit were launched by Handic. Word Result for the 700 series is a companion to Calo Result and is retailing at £250 and Real Estate 64, a monopoly-type game with 3D graphics, costs £14.95 on disk.

The Superbox 64, has a built-in IEEE interface with three cartridge slots and hardware slot switches and is priced at £94.95.
Contact: Handic Software, 5 Albert Road, Crowthorne, Berks. Tel: 0344 778800.

INTERCEPTOR MICROS

Two new games for the 64 – Tales of the Arabian Nights and Where's my bones, both with ultra load were launched at the show together with Pulse an extended version of Interceptor's original assembler.

Cassette versions cost £7 and disks retails at £9 each.
Contact: Interceptor Micros, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145.

INFORMATION TECHNOLOGY EXCHANGE

This exchange provides a centre for members of the business community to obtain information about new technologies and services include training, consultancy and workshop facilities.

Contact: Milton Keynes Information Technology Exchange, Midsummer House, 429 Midsummer Boulevard, Saxon Gate West, Milton Keynes. Tel: 0908 668866.

JCL SOFTWARE

The 64 assembler, a new assembler for the 64 was introduced at the show. Features include toolkit and a text editor and it will be available on catridge for about £45.
Contact: JCL Software Ltd., 47 London Road, Southborough, Tonbridge Wells, Kent. Tel: 0892 27454.

LCL

Francis Drake Adventure Game for the 64 on cassette priced at £7.95 and 'Brainteasers for the Commodore 64' by G Ludinski retailing at £5.95 are the two newest releases from LCL, specialists in Educational products.
Contact: Ludinski Computer-Assisted Learning, 26 Avondale Avenue, Staines, Middlesex. Tel: 0784 58771.

MATOR

Mator launched a number of products: the Sharkette hard disk with an integral tape streamer for the 8296 and 700, prices range from £4,567; Squid, a network for 64's which allows the sharing of eight peripherals between users, retailing at £80 per part, and PERCH, a communications emulation package costing £600 which will connect the Commodore PC (due for release in 1985) to either the ICL mainframe or the IBM 278073780.

Contact: Mator, Willett House, 12 Grand Avenue, Hove, Sussex. Tel: 0273 726464.

MC2

The new Safetrack suspension filing system for floppy disks stores 5.25 and 8 inch disks in existing filing cabinets or can be used as a free-standing unit.

Contact: MC2 Ltd, 235 The Broadway, Wimbledon, London SW19. Tel: 01-540 9370.

MELBOURNE HOUSE

Melbourne are planning the release of a range of adventure games specialising in either graphics or text. Arabian Nights and Castle of Terror were previewed at the show and future adventure games such as Hampstead, Sherlock Holmes, Motor Bike and Mugsy are promised for future release.

Contact: Melbourne House, Castleyard House, Castleyard, Richmond. Tel: 0438 316561.

MICRO POWER

Cybertron Mission, Ghouls, Swoop and Felix in the Factory were released by Micro Power on cassette for the 64 at £6.95 each.

Also on display was the Questprose Incredible Hulk game from Adventure International which, according to a company spokesman, is a "step backwards in adventure games"! It is available on cassette for £9.95. Versions featuring Dr Strange and Spiderman are also planned.

Contact: Micro Power Ltd, Northwood House, North Street, Leeds. Tel: 0532 458800.

MILLS ASSOCIATES

Two mannequins – a secretary fed up with her faulty computer and an engineer in overalls – illustrated the company's function. They provide maintenance contracts for Commodores' Business computers.

Contact: Mills Associates Ltd, Wonastow Road, Monmouth, Gwent. Tel: 0600 4611.

MIRRORSOFT

Count with Oliver and Look Sharp were featured on Mirrorsoft's stand and are the first in their early learning series for the 64.

Both are available on cassette for £7.95. Two utility programs, also for the 64, were previewed: Go Sprite – a sprite generator and animator which can be controlled with joysticks, keyboard and light pen, and Game Creator.
Contact: Mirrorsoft, Holborn Circus, London EC1. Tel: 01-822 3947.

OXFORD COMPUTING SYSTEMS

OCS previewed Turbo, a three dimensional racing game. It pushes graphics and sound to the limits and will cost £7.95 on cassette.

OCS plan to add more compilers to their existing range with the help of an inhouse system known as the Metacompiler. In addition, tools such as the graphics, screen editors and a 'design your own racing circuit' used to design Turbo will be marketed.
Contact: Oxford Computer Systems, Hensington Road, Woodstock, Oxford. Tel: 0993 812700.

PERSONAL PERIPHERALS

Personal Peripherals launched the Super Sketch II tablet together with Master Illustrator software for £59. Four software packages – the Master Home Planner, Business Presentor, Super Music Box and Super Sketch are being developed.

They also introduced the SuperStik joystick.

Contact: Personal Peripherals Inc, 930 N. Beltline Road, Suite 120, Irvine, Texas 75061, USA. Tel: 0101 214 901440.

PRECISION SOFTWARE

Four home applications to be used with Superbase 64 were released at the show. Each Homebase can be bought for £17.95. Programs include birthdays, shopping, address books and diet plans.

Additional new programs include Stepping Stones. Costing £9.99 each, the programs can be altered to suit business requirements such as travel agencies and estate accounts. Two other programs, insurance broking and pharmacy labelling, are retailing at £52.

Contact: Precision Software, 6 Park Terrace, Worcester Park, Surrey. Tel: 01-330 7166.

QUICKSILVA

Trashman, Escape and 3D Tunnel for the 64 were previewed at the show and are available on cassette for £7.95. Traffic, a Hungarian program will be released later this year.

Contact: Quicksilva, 92 Northam Road, Southampton. Tel: 0703 201169.

ROMIK SOFTWARE

Romik introduced Fig Forth, a version of Forth, at the show. Available on disk it costs £14.99.

Plans for future releases include a disassembler package, and two games for the 64 – Anter-Planter and the Great Nordic War.

Contact: Romik Software, 272 Argyll Avenue, Slough. Tel: 0753 71535.

SMALL SYSTEMS ENGINEERING

Small Systems exhibited their new range of high speed single and multi-user hard disk systems which allow 64 users to share a single drive. Features include an integral on-line tape back-up and a built-in error correction code. The 14Mb size costs £4,295 and the 92Mb size costs £6,645.

Contact: Small Systems Engineering Ltd, 2/4 Canfield Place, London NW6. Tel: 01-328 7145.

STACK 100

Stack previewed a drawing software program for the 64 which will cost £5 on cassette. It is designed for technical applications and has two screens. The templates contain flowcharts and electronic diagrams which can be used to design circuit diagrams.

Contact: Stack Computer Services, 290-298 Derby Road, Bootle, Liverpool. Tel: 051 933 5511.

STONECHIP ELECTRONICS

Stonechip previewed two new software programs – Draw program for £9.99 and Breakthrough for £4.99 both on cassette. They also introduced Sketch Shutter another software program.

Stonechip will be marketing Supersketch II from Personal Peripherals.

Contact: Stonechip Electronics, Brook Trading Estate, Deadbrook Lane, Aldershot, Hants. Tel: 0252 318260.

SULIS SOFTWARE

Sulis introduced a range of educational software on cassette for £9.95 – Just a Mot, Starter Word Splits, Word Power, Junior Word Splits, Beseiged and Open Sesame. Future plans include software for the Commodore 16.

Contact: Sulis Software, 4 Church Street, Abbey Green, Bath. Tel: 0225 61929.

SUPERSOFT

Supersoft launched two new games Pesky Painter and Star Command on cassette for £6.95. They also introduced Interdictor Pilot, a space flight combat simulator, Music Master which plays and composes music for £17.95 and a Graphics Design program for £9.95.

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex. Tel: 01-861 1166.

TADIRAN ISRAEL

ESL launched a number of products for the Commodore business machines: ED-NET, an IEEE-433 transparent network solution for educational use; a hard disk Host adaptor system with a removable 5Mb hard disk which can be used on either the 64 or 700 with ED-NET; MAGIC, Manager of Animation Graphics in CAI; ED-WORD, a high calibre bilingual word processor for use on the 8032, 8296, 700 and 64; ED-GRAPHICA a high resolution graphic system for the 64 and 700; an Application Generator based on the B+TREE Data Retrieval System and B+TREE, a Data Base Management System.

Contact: E.S.L. Software Systems, 115 Dizengoff Street, Tel-Aviv 64397, Israel. Tel: 03 234059/03 233130.

3D DIGITAL DESIGN

3D introduced the General Purpose Interface System which can operate with the 64. It combines analogue and digital inputs and outputs and is designed to be used in laboratory and research environments.

Contact: 3D Digital Design and Development Ltd, 18/19 Warren Street, London W1. Tel: 01-387 7388.

TANDATA

Tandata launched a number of products: the TM100 operating on 1200/75bps V23 full duplex mode; the TM120 includes a 300/300 capability and costs £165 and software which allows the micros to act as a viewdata terminal which will work with the entire Commodore range. 64 software costs £32 on disk and £42 on ROM and for both the VIC-20 and Pet, software costs £27.

Contact: Tandata Martketing, Albert Road North, Malvern, Worcs. Tel: 06845 86421.

VALIENT DESIGNS

The Valient Turtle, a remote-controlled Robot with rechargeable batteries was introduced at the show. Designed for educational applications, the turtle is supplied with a remote-control communicator box and with a disk or cassette containing LOGO interface and/or a Turtle graphics package. It retails at £228.85.

Contact: Valient Designs, Park House, 140 Battersea Road, London SW11. Tel: 01-720 3947/627 0470.

VIZA SOFTWARE

Viza launched Vizastar, a fully integrated spreadsheet, database and graphics package for the 64, priced at £60.84.

Contact: Viza Software, 9 Mansion Row, Brompton, Gillingham, Kent. Tel: 0634 813780.

Electronic lady

Dutch computer experts Chriet Titulaer demonstrate future possibilities of the computer with their model to show the effect of oral contraception on women

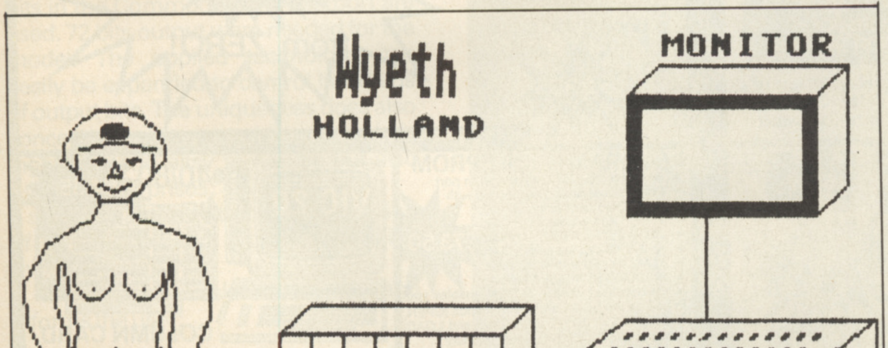
For Dutch computer experts Chriet Titulaer Productions the question from the Wyeth Company sounded very simple: can you construct a model through which the female monthly cycle can be explained and with which the effect of oral contraception (pill usage) can be visualised? EVE became the answer to the question.

The model to be built, should on the basis of a model of the female body, perform the following functions: make the normal menstruation cycle visible and beside this visualise the hormone level in the blood; to show the effect of hormones on some organs; to visualise the effect of two different sorts of hormonal contraceptives.

A stream of hormones in the blood was to be depicted in the model (a 'run effect' of lights or LED's) and a glow effect in some organs. The hormone level in the blood should be made visible by means of differences in intensity of the lights. The hormone level should also be visible on a monitor. The client supplied a detailed list of organs to be visualised in the model and a graph with the lapse of the hormone levels during the monthly cycle.

The heart of the design became a Commodore 64 microcomputer. It is nice to realise that this application fully exploits the possibilities of the computer and its operational memory to the last bit. The software, developed by Henk Weteling, occupied the whole operational memory of the computer. The loading of the program using a (Commodore) cassette recorder takes about 10 minutes.

The program is controlled by sound pulses which are on an audio cassette. The audio cassette is played in a Philips stereo cassette recorder. The explanation about the monthly cycle and the working of the pill is recorded on one track of the tape and the control pulses are on the other. The model has been constructed in such a way that a new audio cassette can be recorded at any time. A control pulse is recorded on tape by a button. The same model can therefore bbe used with different groups (specialists, G.P.'s laymen) who can have explanations on their own levels. The pulses of the audio cassette reach the 64 through the input/output port. The computer in its turn can give the cassette recorder a command ("rewind the tape"). The computer also recognises the authentic control tapes. If by accident the cassette containing the computer program is inserted into the Philips recorder the program will not start.



The complete EVE demonstration model consists of the following parts: Commodore 64 computer; a rack with control electronics; an audio cassette recorder; a cassette recorder functioning as input for the Commodore; a monitor; and a photograph of a female body with about 350 lights.

The control buttons have been removed from the audio cassette recorder and have been replaced by an interface, ie a cable running from the control electronics to and from this recorder. The connection between the model with the lights and the control electronics is made by a 63 core cable.

A demonstration of EVE starts with the loading of the program. When this is done the run command can be started. The computer asks the user whether he wants manual operation or not. When manual operation is not chosen (eg for trade show) the number of cycles can be adjusted. A text containing 4 lines of 29 characters at most can be put in. This option creates the possibility to welcome special visitors via the program on the screen or to add an appropriate text for a certain exhibition. The various parts have been built into an Akai cube, which has been supplied with a small glass door with a lock, a backwall with a vent grating and a drawer for the Commodore. The start button has been adjusted on top of the cube to make the operation easier.

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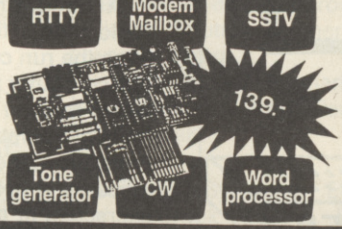

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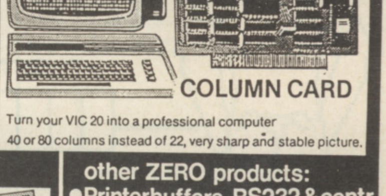

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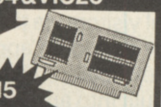

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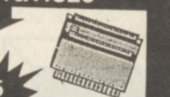

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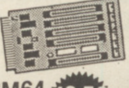

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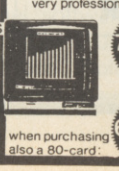

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The software packet can undoubtedly be called a clever composition. In the graph which is being composed, the concentrations of four different substances (LH, FSH, progestagene and ustrogene) is reflected.

The vertical axis changes constantly so that the four substances are dealt with alternatively. In the graph on the monitor these four substances have a different symbol indication, in the model with the lightbulbs they are differently coloured. Different colours are not chosen for use on the monitor because the graphic possibilities of the Commodore 64 are much greater if just one colour is used. The uniqueness of this computer application is on the one side represented in its hardware and on the other in its software.

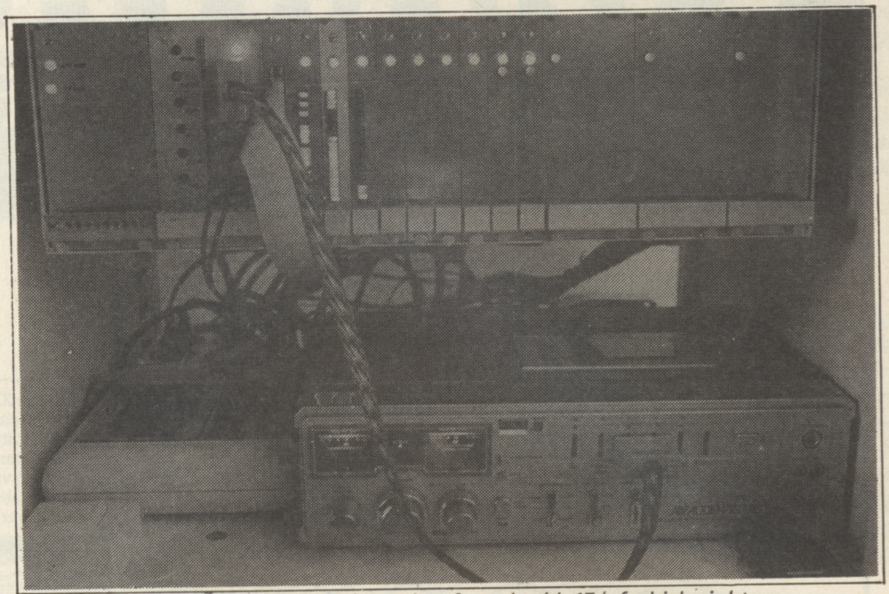
Jac Swillens, who only recently passed his exam at a technical school, has developed the control electronics, ie a rack with 15 printed circuits for the hardware. Jac made the design for the eight different printed circuits (some of them are used more than once in the rack) and had them manufactured in Belgium. The complicated control electronics actually consist of only one example. The model now is much more universally applicable because you can also depict the refining process in the petrochemical industry or traffic control in a city, with minor alterations. For controlling the lights in the model only 2 bits in the Commodore I/O userport are used. 72 bits output were needed for the model. The applied technology can easily be expanded to control hundreds of output bits. The uniqueness does also concern the software which not only is ingenious and easy to handle but also full of nice surprises:

– the program tests the correct working of the model and indicates possible mistakes;

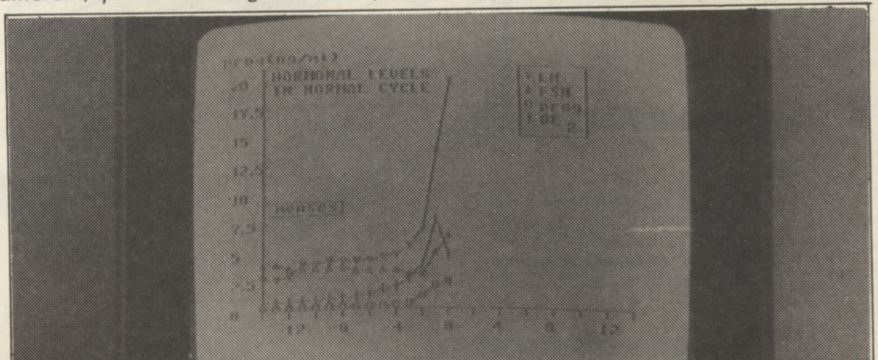
– the program asks questions and informs the user;

– the program even contains the moving logo of the client Wyeth.

The software is written in BASIC together with the (Simon's Basic) option of Commodore. EVE is a 'live' demonstration of the possibilities we have with a computer in the year 1984. Wyeth undoubtedly will draw much attention with this model. In the first place because with this, useful and impressive information about the pill usage can be given, but also because EVE radiates a smart sample of technical ingenuity.



The controlling electronics (above) consist of a rack with 15 (of which eight are different) quick interchangeable and specially developed print plates



The monitor showing the hormone levels and beneath this, the computer and controlling electronics

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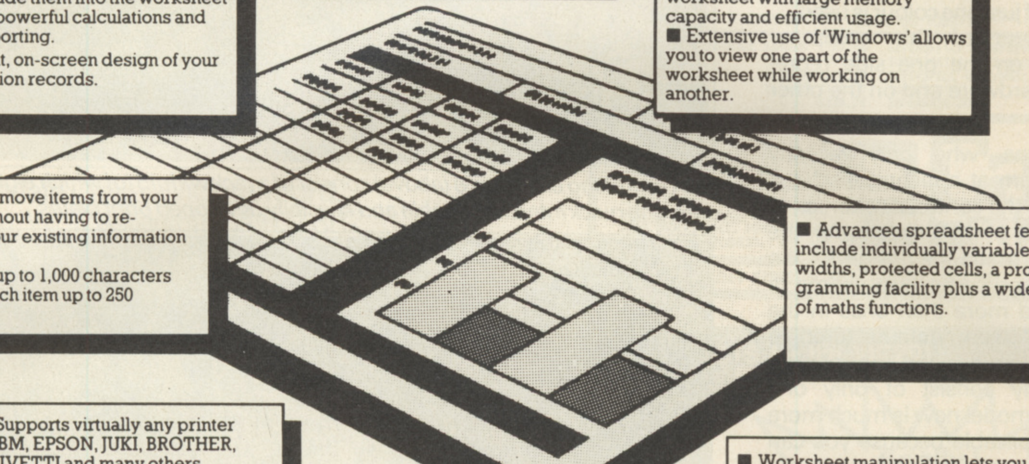

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LETTERS

Dear Sir
I bought a 64 in February of this year and have had to take it back three times to be exchanged. They all displayed the same fault and I am beginning to wonder whether all of the latest 64's are faulty or if I am doing something wrong!

The problem appears to be in the SID chip, in the volume control register (address 54296). Every time I reduce the volume under program control by POKEing decreasing values [(16)] into address 54296 this produces an unpleasant 'click' from the speaker, ruining many special sound effects. This occurs when using my TV receiver and my hi-fi system (through the output jack) and also occurs if the VOLUME command of SIMON'S BASIC is used to reduce the volume (whether or not the waveform has been set).

I would normally assume I was doing something wrong except that the same problem doesn't occur when I use the school 64 in the same configuration.

The school 64 is one of the earlier models, manufactured in West Germany with mustard colour keys whereas mine is a recent model. Is there any difference and what am I doing wrong?

W P Conway,
London.

There are differences between the SID chip of the older and newer models of the 64. The main changes are in the filters. To eliminate the clicking sound, try reducing the volume by setting the 'release values' rather than POKEing to change the volume directly. By doing this the volume will die slowly, rather than POKEing the volume directly during a sound thus causing the click sound.

It is unlikely that Commodore intended the SID chip to make the clicking sound, so there may be a small fault in your machine.

Dear Sir
I am 14 years old and live in Portugal. I have a VIC-20 and am very interested in music synthesisers especially as I play the organ.

I would like to know if my synthesiser can be plugged into the VIC-20 and if it can, what accessories are necessary.

I would also like a booklet that shows all the things I can plug into the VIC.

John De Lousa
Portugal

The Vic-20's sound capacity is not as good as the 64 and we have not heard of any synthesisers that it can be used with.

Commodore produce a booklet which lists a variety of products – games, utilities, educational programs which are VIC-20 compatible. Write to Vicsoft, 675 Ajax Avenue, Slough, Berks.

Dear Sir
I recently saw a program featuring a development rack. Printed circuit boards with extra chips and Eproms slot into the rack and it connects them to a computer system. The rack can be used in the development stages of a program. What I would like to know is whether there is a rack available for the 64?

Antonio Windas
Hull

The simple answer is that there isn't! The 64 has a large enough memory for most programming purposes and so there isn't a market for memory expanders.

Dear Sir
I have not had much success with the auto-run program in the April issue.

I have checked it several times, but every time I run it, I get a "number of data value error." When I try to save something with it using the SYS command, the tape recorder just keeps winding on and on! When I type RUN/STOP RESTORE, the screen just goes blank. Can you help?

Is there any information for a disk version of the auto-run program?

A Conlan
N Ireland

Accidently typing commas at the end of a line is one of the most common mistakes and by your description it sounds as if you have added one comma too many! Re-check your program.

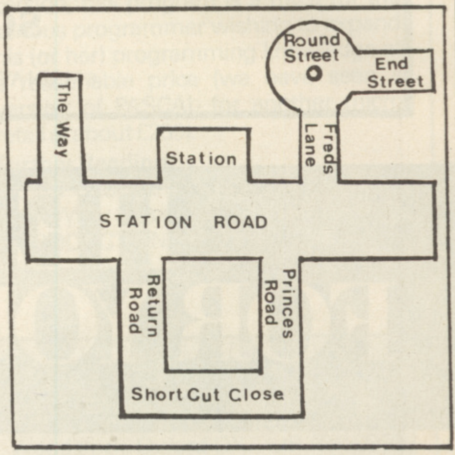
We haven't developed an auto-run program for disks yet, but we have had a number of enquiries about a disk version and so we will probably be publishing one in the near future.

Dear Sir
Please could you HELP!

I am having trouble with the Adventure Game in the November 1983 issue. I have been locked in a station, blown up and run over by buses and I'm still going in circles! I can't get past the locations shown in the enclosed sketch. Am I making a mistake?

J A Quintin
Norwich
Norfolk

J A Quintin's diagram illustrates his predicament



We assume that you included the line that we omitted from the published program because you wouldn't have got of the tube station otherwise! Judging from the diagram it looks like you missed line 10060 because you haven't included End Road. If not, just check the listings again because there are no errors in the program. Happy adventuring!

THE ADDRESS TO WRITE TO IS:
QUERIES, Commodore Computing International,
167-169 Great Portland Street, London W1.
THE TELEPHONE NUMBER TO CALL IS:
01-636 6531 (remember – Thursday afternoons, 2 pm till 5 pm)

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If you are really desparate for an answer and feel you really cannot wait for a published reply you can use our telephone enquiry service. We will have two of our staff standing-by every Thursday afternoon between 2 pm and 5 pm. That's when we want to hear from you.

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Oxford Pascal

Tired of Basic? Find Machine Code awkward to use? Read on about Oxford Pascal for the 64.

From Oxford Computer Systems (Software) Ltd, 'Oxford Pascal is a complete implementation of the popular programming language PASCAL running on the 64.'

That is what they claim. How true is this? Read on:

First we will explain what PASCAL is. PASCAL is a high level 'structured' programming language that is taught as a first language at most universities (they don't like Basic). The advantage of PASCAL over BASIC is that PASCAL is structured – that is to say PASCAL programs are much easier to read and understand, which makes the debugging of the program much easier as well.

A PASCAL program can be separated into three different sections:

1. Variable declarations consist of constants, data types, and variable as in lines 1030-1100 of the example PASCAL program at the end.
2. The functions and procedures can be multi-line and are like small programs in themselves, being possible to split them into the same three sections. In the example there are three procedures being used, these are lines 1110-1230, 1240-1350, and 1360-1460.
3. The Main Program. Although the procedures come in the listing before the main program, when it is run control is sent directly to the main program. In the example line 1470.

One other thing to note is that on examination of the PASCAL example, there is not a single reference to a line number (in fact line numbers are not used and if GOTO's are required, they are labelled with numbers) but in the equivalent BASIC version, there are quite a few GOTO's and GOSUB's.

The data TYPEs mentioned in (1) are very complex and would take up too much time to explain in this review but when mastered can be used to great effect as they are very powerful.

Another major advantage of PASCAL over BASIC is the execution time. PASCAL programs run much faster than BASIC because they are compiled first. This means that the PASCAL source program (example listing) is compiled to P-CODE which is a pseudo-machine code program which is run on the system's P-CODE interpreter. An example of the increase of speed would be to compare the PASCAL and the BASIC program examples. The PASCAL program took about 2 minutes to run and the BASIC version took just under 7½ minutes.

Does Oxford PASCAL measure up to standard PASCAL? Yes, and more. Oxford PASCAL is a full implementation of Standard PASCAL and also gives some added commands. These are for High Resolution graphics and sound.

The manual is detailed and understandable, not only giving explanations of the commands and what they do but also explaining the rudimentaries of PASCAL programming.

Oxford PASCAL is compiled to P-CODE with the resident compiler but it can be compiled on disk to load in as a program with a SYS call.

Oxford PASCAL comes on tape for £14.95 or disk for £49.95. The disk version is compatible with a 1541 disk drive or a 4040, 8050, 8250 via interpod (another product from Oxford Computer Systems Ltd.).

We reviewed Oxford PASCAL on the latter of the two systems using a 4040 disk drive.

Conclusions

At a price of nearly £50 for the disk version, this program is a must for the serious programmer wishing to expand his (or her) programming knowledge at a reasonable price (we have seen a version of PASCAL for another micro retail at about £250).

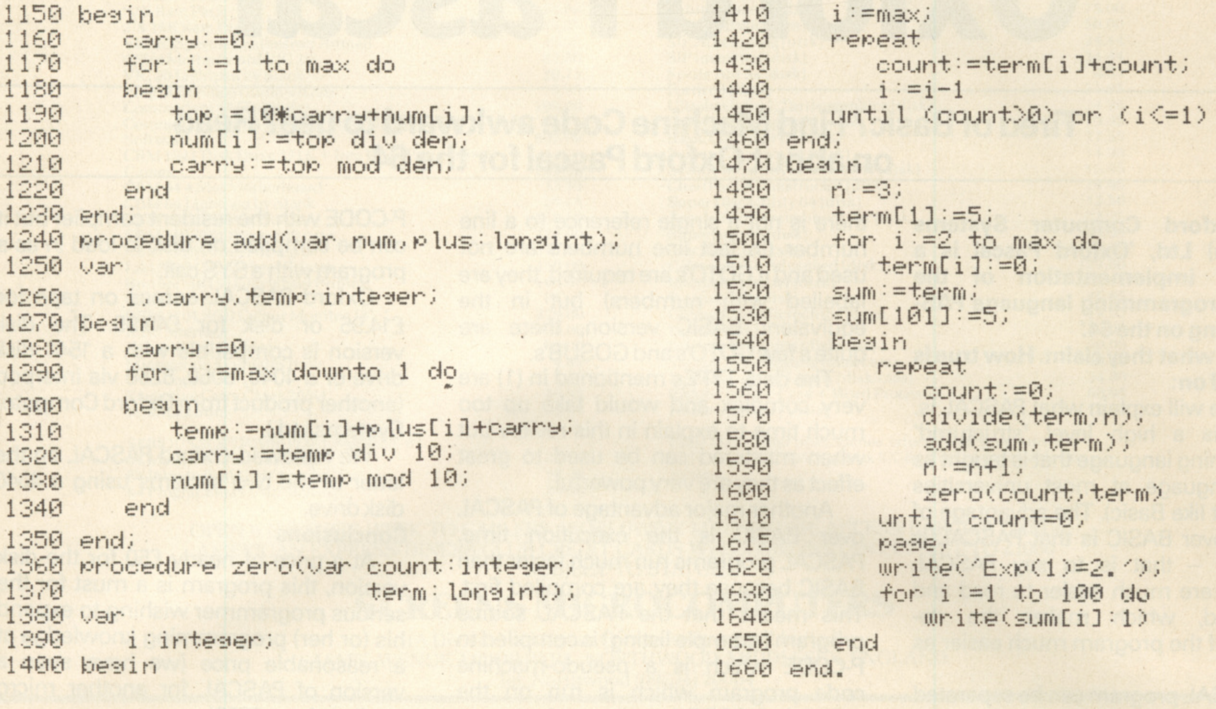
Further Reading

QUICK PASCAL by David L. Matuszek, John Wiley & Sons.

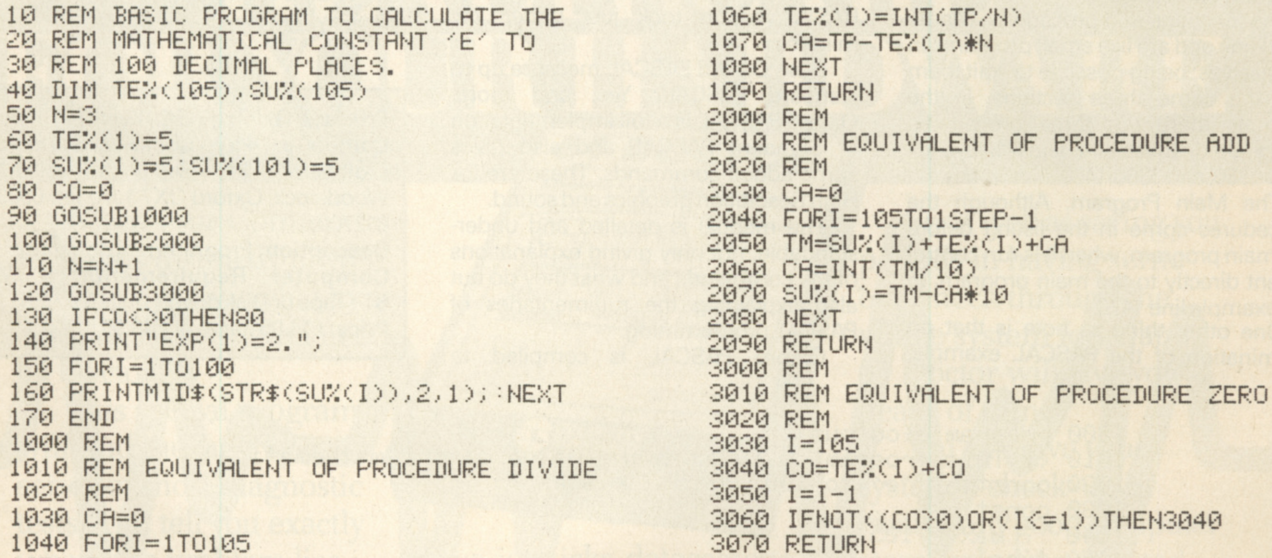
INTRODUCTION TO PASCAL by Rodney Zaks, Sybex inc.

Product: Oxford PASCAL
Company: Oxford Computer Systems (Software) Ltd., Hensington Road, Woodstock, Oxford OX7 1JR. Tel: 0993 812700.
Description: Programming language
Computer Requirements: CBM 64+Tape or Disk drive.
Price: £14.95 (tape) or £49.95 (disk).

```
1000 program e(output);
1010 (* This program calculates the value of the mathematical
1020 constant 'e' to 100 decimal places *)
1030 const
1040    max = 105;
1050 type
1060    digit  = 0..9;
1070    longint = array [1..max] of digit;
1080 var
1090    term,sum:longint;
1100    i,n,count:integer;
1110 procedure divide(var num:longint;
1120                      den:integer);
1130 var
1140    i,carry,top:integer;
```



```
1150 begin
1160    carry:=0;
1170    for i:=1 to max do
1180    begin
1190        top:=10*carry+num[i];
1200        num[i]:=top div den;
1210        carry:=top mod den;
1220    end
1230 end;
1240 procedure add(var num,plus:longint);
1250 var
1260    i,carry,temp:integer;
1270 begin
1280    carry:=0;
1290    for i:=max downto 1 do
1300    begin
1310        temp:=num[i]+plus[i]+carry;
1320        carry:=temp div 10;
1330        num[i]:=temp mod 10;
1340    end
1350 end;
1360 procedure zero(var count:integer;
1370                   term:longint);
1380 var
1390      i:integer;
1400 begin
1410    i:=max;
1420    repeat
1430       count:=term[i]+count;
1440       i:=i-1
1450    until (count>0) or (i<=1)
1460 end;
1470 begin
1480    n:=3;
1490    term[1]:=5;
1500    for i:=2 to max do
1510       term[i]:=0;
1520    sum:=term;
1530    sum[101]:=5;
1540    begin
1550       repeat
1560          count:=0;
1570          divide(term,n);
1580          add(sum,term);
1590          n:=n+1;
1600          zero(count,term)
1610       until count=0;
1615    page;
1620    write('Exp(1)=2.');
1630    for i:=1 to 100 do
1640       write(sum[i]:1)
1650    end
1660 end.
```



```
10 REM BASIC PROGRAM TO CALCULATE THE
20 REM MATHEMATICAL CONSTANT 'E' TO
30 REM 100 DECIMAL PLACES.
40 DIM TE%(105),SU%(105)
50 N=3
60 TE%(1)=5
70 SU%(1)=5:SU%(101)=5
80 CO=0
90 GOSUB1000
100 GOSUB2000
110 N=N+1
120 GOSUB3000
130 IFCO<>0THEN80
140 PRINT"EXP(1)=2.";
150 FORI=1TO100
160 PRINTMID$(STR$(SU%(I)),2,1);:NEXT
170 END
1000 REM
1010 REM EQUIVALENT OF PROCEDURE DIVIDE
1020 REM
1030 CA=0
1040 FORI=1TO105
1050 TP=10*CA+TE%(I)
1060 TE%(I)=INT(TP/N)
1070 CA=TP-TE%(I)*N
1080 NEXT
1090 RETURN
2000 REM
2010 REM EQUIVALENT OF PROCEDURE ADD
2020 REM
2030 CA=0
2040 FORI=105TO1STEP-1
2050 TM=SU%(I)+TE%(I)+CA
2060 CA=INT(TM/10)
2070 SU%(I)=TM-CA*10
2080 NEXT
2090 RETURN
3000 REM
3010 REM EQUIVALENT OF PROCEDURE ZERO
3020 REM
3030 I=105
3040 CO=TE%(I)+CO
3050 I=I-1
3060 IFNOT((CO>0)OR(I<=1))THEN3040
3070 RETURN
READY.
```

The above is an example of a PASCAL program and the BASIC equivalent (which do you prefer?)

SWITCHABLE 16K RAM

Fox Electronics' Vixen Switchable 16K RAM expansion cartridge expands the VIC-20 memory quickly and efficiently.

The VIC-20's memory map can be divided into four 16K memory blocks and, by setting the switches in certain combinations, these blocks can be utilised to give four different memory configurations: in Mode 1, there is 8K of memory in blocks 1 and 2 giving 16K RAM; in Mode 2, 3K of memory is put in RAM 1-3 and 8K in block 1 producing a total of 11K altogether; in Mode 3, 3K of memory is in RAM 1-3 and the 8K in block 3 is not seen by the computer. Finally in Mode 4, the 16K can be used with a standard 8K cartridge to give a total of 24K.

With the cartridge fitted, modes one to four will have the following bytes free; 19967, 11775, 6655 and 3583.

The switch presented no problems and the cartridge worked extremely well.

Product Name:
Vixen Switchable 16K RAM
Product:
16K memory expansion board for VIC-20
Company:
Fox Electronics Ltd, Fox House, 35 Martham Road, Hemsby, Nr Great Yarmouth, Norfolk. Tel: 0493 732420
Features:
Cartridge with attachment for expansion port.
Switches can be set to give four memory combinations: 16K, 8K and 3K, 3K only and 16K (for use with 8K cartridge)
Documentation:
Adequate leaflet
Warranty:
1 year
Price:
£34.95 inc VAT.

LONGMAN EDUCATIONAL SOFTWARE

Longman have produced a set of programs for the 64 designed to reinforce classroom learning for six to ten year olds. The three programs in this early learning series – BMX Number Jump, 3D Hypermaths and Word Wobbler – incorporate the basic skills of reading, spelling and arithmetic into colourful and exciting games.

The games are only intended to supplement skills children have already acquired at school. They are not complex arcade games requiring lightning reflexes, the only requirement besides some arcade competence (using a joystick for example) is answering the questions speedily and accurately. Even a child who regularly tots up ten thousand on Space Invaders will have trouble with these games if he can't add 17 and 9 or subtract 5 from 13 quickly.

Of course childrens' abilities vary and so there are a range of levels to allow for the variations. In Word Wobbler there are five levels of difficulty. For example, children can be asked to spell 'pup' in the lowest level or 'unicorn' in the highest. Similarly in both maths programs the easier levels deal with simple addition, whereas the harder ones ask multiplication questions.

The maze in BMX Number Jump consists of bright green bushes, water jumps, gates and boxes containing various numbers. Seven levels of difficulty incorporate the three basic maths skills using numbers 0 to 99. An example is the multiplication tables. The player controls a BMX bike, a familiar theme for most children, and a pink kangaroo lurks in the corner ready to knock the bike over on contact. A sum appears on one side and the answer lies somewhere in the maze. If the player can get to the correct answer box before the kangaroo the next question is posed. After getting five questions right the player goes onto the next level and the kangaroo gets faster.

It's an amusing game and the bike does some great wheelies. There is no time for mistakes as the kangaroo moves fast and once you've mastered the bike controls it gets to be quite an exciting game.

In 3D Hypermaths the action takes place in space as the player dodges meteors en route to the black hole. The difficulty levels are similar to those in BMX Number Jump.

On one side of the screen, the score, the question and the answer board are shown and to successfully attain the heights of Galactic Commander, the player has to push the ship forward using the joystick until the answer flashes on screen. Once five questions ave been answered correctly and the twisting tunnel is negotiated without sustaining too many knocks, the player moves up the ranks.

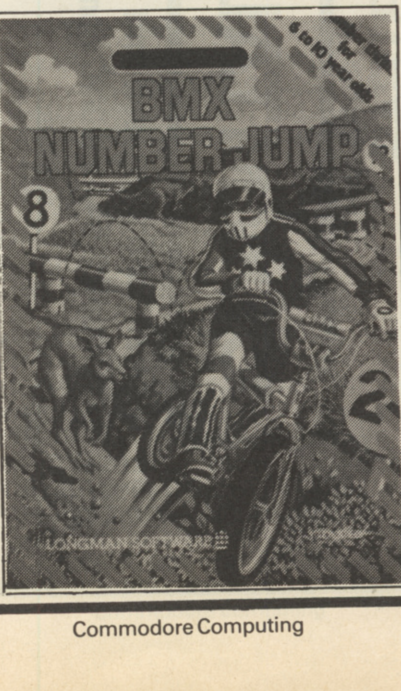
To attain success, the player has to keep the ship under control and get the answer right encouraging the development of speed and skill in maths as well as developing dexterity and coordination.

Spelling words correctly is the primary aim in Word Wobbler. More than 1500 words are divided into difficulty levels. Letters are arranged haphazardly on a grid and a word pops up on the edge of the screen. It then disappears and by guiding the letter getter along conveyor belts the player goes from one letter to another avoiding yellow word wobbling aliens. If the wrong letter is chosen or the player overstays he is zapped into the sky and descends by parachute losing one of his five lives. There is also an option for the kids to participate by inserting their own words.

As the games continues alien appearances increase and the letters change places on the grid in mid-game.

All three programs are excellently designed. The game formats are fairly simple and the use of colourful imaginative graphics will help to stimulate a child's interest. We found some of the questions and game situations quite testing so even the most advanced child will find a level to suit them.

Product:
Educational Software
Titles:
BMX Number Jump, 3D Hypermaths and Word Wobbler
Company:
Longman Software, Longman House, Burnt Mill, Harlow, Essex, CM20 2JE. Tel: 0279 26721
Applications:
Educational aids for 6-10 year olds
Documentation:
Adequate explanatory leaflets
Hardware:
64, cassette recorder, joystick essential
Price:
£7.95



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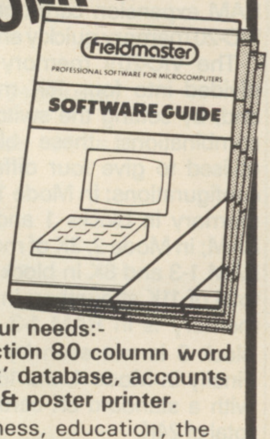

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HINTS AND TIPS

Mini monitor

This month we have a useful program for the 64 that we have called mini-mon (for want of a better name), which allows you to access the computer's memory directly.

Mini-Mon

This program has five commands: M (Memory display), X (exit), L (Load), S (Save), and : (Alter memory).

The reason for the command : is that the memory display command puts a ':' at the front of the line and you can alter the memory just by moving the cursor to the required byte, change it and press return.

Memory Display

The Syntax for memory display is:
M ADR1 ADR2

Where ADR1 and ADR2 are the start and end addresses of the memory to be displayed in hex, eg M9000 9281 will display the memory that this program occupies.

The memory display format is the address followed by eight bytes of memory all displayed in hex:
.:9000 A2 FF 9A A9 0D 20 D2 FF

Hence the command ':'. To change a byte in memory, use the cursor keys to position the cursor over the required, change it (remember in hex), and press the return key. Any alterations to the line will be made.

Load

This routine loads a block of memory from any input device (tape or disk). The format for this is:
L"filename",01 for tape or
L"filename",08 for disk.

Be careful that the program being loaded does not overwrite mini-mon.

Save

This routine allows you to save a specified block of memory again to tape or disk. It is called by:
S"filename",01,ADR1,ADR2 for tape or:
S"filename",08,ADR1,ADR2 for disk.

Where ADR1 is the start of the block of memory and ADR2 is the end address plus one.

Exit

This routine just returns you to Basic. X

Note: Mini-mon will work with the Basic ROM switched out but if you take it out, make sure it is in before using the X command.

```
10 I=36800:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<>87409THENPRINT"CHECKSUM ERROR":END
60 IFI<>37509THENPRINT"NO. OF DATA ERROR":END
70 PRINT"▮ENTER MINI-MON WITH SYS36800."
80 PRINT"▮TO SAVE MINI-MON, ENTER MINI-MON AND"
90 PRINT"TYPE S"CHR$(34)"MINI-MON"CHR$(34)",01,8FC0,9286"
100 DATA169,192,133,51,133,53,133
110 DATA55,169,143,133,52,133,54
120 DATA133,56,76,0,144,0,0
130 DATA0,0,0,0,0,0,0
140 DATA0,0,0,0,0,0,0
150 DATA0,0,0,0,0,0,0
160 DATA0,0,0,0,0,0,0
170 DATA0,0,0,0,0,0,0
180 DATA0,0,0,0,0,0,0
190 DATA0,162,255,154,169,13,32
200 DATA210,255,169,46,32,210,255
210 DATA32,184,144,32,207,144,32
220 DATA218,144,189,133,146,160,0
230 DATA217,118,146,240,8,200,192
240 DATA5,208,246,76,234,144,232
250 DATA152,10,168,185,124,146,72
260 DATA185,123,146,72,96,189,133
270 DATA146,201,32,240,3,76,234
280 DATA144,32,218,144,32,29,145
290 DATA165,253,133,251,165,254,133
```

```
300 DATA252,189,133,146,201,32,208
310 DATA14,32,218,144,32,29,145
320 DATA32,218,144,189,133,146,240
330 DATA3,76,234,144,169,13,32
340 DATA210,255,169,46,32,210,255
350 DATA169,58,32,210,255,32,104
360 DATA145,32,252,144,160,0,177
370 DATA251,32,2,145,169,32,32
380 DATA210,255,200,192,8,208,241
390 DATA32,234,255,32,225,255,208
400 DATA3,76,0,144,165,251,24
410 DATA105,8,133,251,165,252,105
420 DATA0,133,252,197,254,144,190
430 DATA240,3,76,0,144,165,251
440 DATA197,253,144,179,76,0,144
450 DATA76,116,164,160,0,32,18
460 DATA225,201,13,240,8,153,133
470 DATA146,200,192,89,208,241,169
480 DATA0,153,133,146,96,162,0
```

```
490 DATA189,133,146,201,46,208,1
500 DATA232,96,189,133,146,201,32
510 DATA208,8,232,224,89,208,244
520 DATA76,234,144,96,169,13,32
530 DATA210,255,169,63,32,210,255
540 DATA76,0,144,169,32,32,210
550 DATA255,169,32,32,210,255,96
560 DATA141,116,146,74,74,74,74
570 DATA170,189,100,146,32,210,255
580 DATA173,116,146,41,15,170,189
590 DATA100,146,32,210,255,96,32
600 DATA42,145,133,254,232,32,42
610 DATA145,133,253,232,96,189,133
620 DATA146,141,116,146,160,0,185
630 DATA100,146,205,116,146,240,8
640 DATA200,192,16,208,243,76,234
650 DATA144,152,10,10,10,10,141
660 DATA117,146,232,189,133,146,141
670 DATA116,146,160,0,185,100,146
680 DATA205,116,146,240,8,200,192
690 DATA16,208,243,76,63,145,152
700 DATA13,117,146,96,165,252,32
710 DATA2,145,165,251,32,2,145
720 DATA96,32,29,145,160,0,132
730 DATA2,189,133,146,201,32,240
740 DATA3,76,234,144,32,218,144
750 DATA32,42,145,164,2,145,253
760 DATA200,192,8,240,6,132,2
770 DATA232,76,122,145,76,0,144
780 DATA32,218,144,189,133,146,201
790 DATA34,240,3,76,234,144,32
800 DATA70,146,32,218,144,189,133
810 DATA146,240,17,201,44,240,3
820 DATA76,234,144,232,32,218,144
830 DATA32,42,145,76,199,145,169
840 DATA1,133,184,133,185,133,186
850 DATA169,1,133,188,169,0,133
860 DATA187,32,213,255,76,0,144
870 DATA32,218,144,189,133,146,201
880 DATA34,240,3,76,234,144,32
890 DATA70,146,32,218,144,189,133
900 DATA146,201,44,208,108,232,32
910 DATA218,144,32,42,145,133,185
920 DATA133,184,133,186,169,0,133
930 DATA187,169,1,133,188,232,32
940 DATA218,144,189,133,146,201,44
950 DATA208,76,232,32,218,144,32
960 DATA29,145,165,254,133,252,165
970 DATA253,133,251,32,218,144,189
980 DATA133,146,201,44,208,51,232
990 DATA32,218,144,32,29,145,169
1000 DATA13,32,210,255,166,253,164
1010 DATA254,169,251,32,216,255,76
1020 DATA0,144,232,169,0,133,183
1030 DATA189,133,146,240,17,201,34
1040 DATA240,11,232,164,183,153,0
1050 DATA1,230,183,76,75,146,232
1060 DATA96,76,234,144,48,49,50
1070 DATA51,52,53,54,55,56,57
1080 DATA65,66,67,68,69,70,77
1090 DATA128,77,88,58,76,83,52
1100 DATA144,180,144,114,145,155,145
1110 DATA218,145,-1
READY.
```

```
  10 ! MINI-MON SOURCE CODE FOR THE 64
  20 ! FOR VIC, CHANGE JMP $A474 AT EXIT
  30 ! TO JMP $C474.
  40 !
1000 *=$9000
1001 ! MAIN INPUT AND COMMAND PARSER
1002 ! ROUTINE.
1003 !
1010 START          LDX #$FF
1015                TXS
1019                LDA #$0D
1020                JSR $FFD2
1030                LDA #$2E
1040                JSR $FFD2
1050                JSR INPUT
1060                JSR SCDOT
1070                JSR SCSP
1080                LDA BUFFER,X
1090                LDY #$00
1100 LOOP1          CMP CLIST,Y
1110                BEQ FOUND
1120                INY
1130                CPY #$05
1140                BNE LOOP1
1150                JMP QUESTION
1180 FOUND          INX
1185                TYA
1190                ASL A
1200                TAY
1210                LDA CADDR+1,Y
1220                PHA
1230                LDA CADDR,Y
1240                PHA
1250                RTS
1251 ! ROUTINE TO DISPLAY MEMORY
1252 !
1260 MEM            LDA BUFFER,X
1270                CMP #$20
1280                BEQ MEM1
1290                JMP QUESTION
1300 MEM1           JSR SCSP
1310                JSR GETADDR
1320                LDA $FD
1330                STA $FB
1340                LDA $FE
1350                STA $FC
1360                LDA BUFFER,X
1370                CMP #$20
1380                BNE MEM2
1390                JSR SCSP
1400                JSR GETADDR
1410                JSR SCSP
1420                LDA BUFFER,X
1430                BEQ MEM3
1440 MEM2           JMP QUESTION
1450 MEM3           LDA #$0D
1455                JSR $FFD2
1459                LDA #$2E
1460                JSR $FFD2
1470                LDA #$3A
1480                JSR $FFD2
1490                JSR DISPADDR
1500                JSR SPACE
1510                LDY #$00
```

```
1520 LOOP8       LDA ($FB),Y
1530             JSR DISPLAY
1535             LDA #$20
1536             JSR $FFD2
1540             INY
1550             CPY #$08
1560             BNE LOOP8
1565             JSR $FFEA
1566             JSR $FFE1
1567             BNE MEM31
1568             JMP START
1570 MEM31       LDA $FB
1580             CLC
1590             ADC #$08
1600             STA $FB
1610             LDA $FC
1620             ADC #$00
1630             STA $FC
1650             CMP $FE
1660             BCC MEM3
1670             BEQ MEM4
1675             JMP START
1680 MEM4        LDA $FB
1690             CMP $FD
1700             BCC MEM3
1710             JMP START
1711 ! EXIT ROUTINE
1712 !
1720 EXIT        JMP $A474
1721 ! ROUINE TO INPUT A LINE AND STORE
1722 ! IN THE BUFFER
1723 !
1730 INPUT       LDY #$00
1740 INPUT1      JSR $E112
1750             CMP #$0D
1760             BEQ RETCHAR
1770             STA BUFFER,Y
1780             INY
1790             CPY #$59
1800             BNE INPUT1
1810 RETCHAR     LDA #$00
1820             STA BUFFER,Y
1830             RTS
1831 ! ROUTINE TO SCAN PAST A DOT ON
1832 ! THE INPUT LINE.
1833 !
1840 SCDOT       LDX #$00
1850             LDA BUFFER,X
1860             CMP #$2E
1870             BNE NODOT
1880             INX
1890 NODOT       RTS
1891 ! ROUTINE TO SCAN PAST ANY
1892 ! UNWANTED SPACES ON INPUT LINE
1893 !
1900 SCSP        LDA BUFFER,X
1910             CMP #$20
1920             BNE NOSP
1930             INX
1940             CPX #$59
1950             BNE SCSP
1960             JMP QUESTION
1970 NOSP        RTS
1971 ! ROUTINE TO PRINT ? WHEN AN INPUT
1972 ! ERROR IS ENCOUNTERED.
1973 !
1980 QUESTION    LDA #$0D
1990             JSR $FFD2
2000             LDA #$3F
```

```
2010             JSR $FFD2
2020             JMP START
2021 ! ROUTINE TO PRINT 1 OR 2 SPACES
2022 !
2030 SPACE2      LDA #$20
2040             JSR $FFD2
2050 SPACE       LDA #$20
2060             JSR $FFD2
2070             RTS
2071 ! ROUTINE TO DISPLAY A BYTE STORED
2072 ! IN .A OUT AS A 2 DIGIT HEX NO.
2073 !
2080 DISPLAY     STA BYTE
2090             LSR A
2100             LSR A
2110             LSR A
2120             LSR A
2130             TAX
2140             LDA TABLE,X
2150             JSR $FFD2
2160             LDA BYTE
2170             AND #$0F
2180             TAX
2190             LDA TABLE,X
2200             JSR $FFD2
2210             RTS
2211 ! ROUTINE TO GET A 2 BYTE ADDRESS
2212 ! FROM THE INPUT LINE AND STORE
2213 ! IT IN ($FD)
2214 !
2220 GETADDR     JSR GETBYTE
2230             STA $FE
2235             INX
2240             JSR GETBYTE
2250             STA $FD
2255             INX
2260             RTS
2261 ! ROUTINE TO GET A SINGLE BYTE
2262 ! FROM THE INPUT LINE
2263 !
2270 GETBYTE     LDA BUFFER,X
2280             STA BYTE
2290             LDY #$00
2300 GBYTE1      LDA TABLE,Y
2310             CMP BYTE
2320             BEQ HIGOT
2330             INY
2340             CPY #$10
2350             BNE GBYTE1
2360 GBERROR     JMP QUESTION
2410 HIGOT       TYA
2415             ASL A
2420             ASL A
2430             ASL A
2440             ASL A
2450             STA BYTE+1
2460             INX
2470             LDA BUFFER,X
2480             STA BYTE
2490             LDY #$00
2500 GBYTE2      LDA TABLE,Y
2510             CMP BYTE
2520             BEQ LOGOT
2530             INY
2540             CPY #$10
2550             BNE GBYTE2
2560             JMP GBERROR
2570 LOGOT       TYA
2580             ORA BYTE+1
```

```
2590                RTS
2591 ! ROUTINE TO DISPLAY AN ADDRESS
2592 !
2600 DISPADDR      LDA $FC
2610                JSR DISPLAY
2620                LDA $FB
2630                JSR DISPLAY
2640                RTS
2641 ! ROUTINE TO ALTER MEMORY ON THE
2642 ! ':' COMMAND.
2643 !
2650 CHANGE         JSR GETADDR
2659                LDY #$00
2660                STY $02
2670 CH1            LDA BUFFER,X
2680                CMP #$20
2690                BEQ CH2
2700                JMP QUESTION
2710 CH2            JSR SCSP
2720                JSR GETBYTE
2730                LDY $02
2740                STA ($FD),Y
2750                INY
2760                CPY #$08
2770                BEQ CHFIN
2780                STY $02
2785                INX
2790                JMP CH1
2800 CHFIN          JMP START
2801 ! ROUTINE TO LOAD A FILE
2802 !
2810 LOAD           JSR SCSP
2820                LDA BUFFER,X
2830                CMP #$22
2840                BEQ LOAD1
2850                JMP QUESTION
2860 LOAD1          JSR GETFNAME
2980                JSR SCSP
2990                LDA BUFFER,X
3000                BEQ TAPE
3010                CMP #$2C
3020                BEQ GETDEV
3030                JMP QUESTION
3040 GETDEV         INX
3045                JSR SCSP
3050                JSR GETBYTE
3060                JMP SETUP
3070 TAPE           LDA #$01
3080 SETUP          STA $B8
3090                STA $B9
3100                STA $BA
3110                LDA #$01
3120                STA $BC
3130                LDA #$00
3140                STA $BB
3150                JSR $FFD5
3160                JMP START
3161 ! ROUTINE TO SAVE AN AREA OF
3162 ! MEMORY
3163 !
3170 SAVE           JSR SCSP
3180                LDA BUFFER,X
3190                CMP #$22
3200                BEQ SAVE1
3210                JMP QUESTION
3220 SAVE1          JSR GETFNAME
3230                JSR SCSP
```

```
 3240                LDA BUFFER,X
 3250                CMP #$2C
 3260                BNE FNAMER
 3265                INX
 3270                JSR SCSP
 3280                JSR GETBYTE
 3290                STA $B9
 3300                STA $B8
 3310                STA $BA
 3320                LDA #$00
 3330                STA $BB
 3340                LDA #$01
 3350                STA $BC
 3355                INX
 3360                JSR SCSP
 3370                LDA BUFFER,X
 3380                CMP #$2C
 3390                BNE FNAMER
 3395                INX
 3400                JSR SCSP
 3410                JSR GETADDR
 3420                LDA $FE
 3430                STA $FC
 3440                LDA $FD
 3450                STA $FB
 3460                JSR SCSP
 3470                LDA BUFFER,X
 3480                CMP #$2C
 3490                BNE FNAMER
 3495                INX
 3500                JSR SCSP
 3510                JSR GETADDR
 3515                LDA #$0D
 3516                JSR $FFD2
 3520                LDX $FD
 3530                LDY $FE
 3540                LDA #$FB
 3550                JSR $FFD8
 3560                JMP START
 3570 ! ROUTINE TO GET FILENAME FROM
 3580 ! INPUT LINE FOR LOAD AND SAVE
 3590 !
 5000 GETFNAME       INX
 5010                LDA #$00
 5020                STA $B7
 5030 FNAME1         LDA BUFFER,X
 5035                BEQ FNAMER
 5040                CMP #$22
 5050                BEQ ENDFOUND
 5060                INX
 5070                LDY $B7
 5080                STA $0100,Y
 5090                INC $B7
 5100                JMP FNAME1
 5110 ENDFOUND       INX
 5115                RTS
 5120 FNAMER         JMP QUESTION
10000 TABLE          TXT "0123456789ABCDEF"
10010 BYTE           WOR 0
10020 CLIST          TXT "MX:LS"
10030 CADDR          WOR MEM-1
10040                WOR EXIT-1
10045                WOR CHANGE-1
10046                WOR LOAD-1
10047                WOR SAVE-1
10050 BUFFER         BYT 0
READY.
```

COMMODORE games

JULY/AUGUST 1984 issue

Adventure Special

200 FREE copies of Urban Upstart in our logic competition

Writing an adventure

Profiles

Reviews

“When I got it home, it was nothing like the picture on the box.”

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Commodore games

Commodore have released five new arcade games for the 64: Mayhem, Pandora's Box, Punchy, Little Icarus and Humphrey. They can be bought individually on cassette for £5.99 or altogether on disk for £19.99.

Little Icarus is the most original game. Based on a Greek mythological tale, Icarus sets out to find Daedalus by flying through the sky. There are five levels and each one brings fresh difficulties – birds, wasps and of course the sun will melt Icarus's wing wax if he flies too close. Bright graphics and a jolly tune liven up the game and the screen scrolling is very smooth.

Pandora's Box has been opened and she has to stop all the nasty creatures escaping. The box sides are coloured and to successfully stop their escape she has to blow the coloured nasties onto the right side.

In Mayhem, the aim is to stop the Tribbles destruction by keeping them from the light. Various objects keep removing the gate which guards the light and you have to replace it. There are three levels of difficulty.

The bobby has to cross the castle and rescue Judy from Punch in Punchy. There are sixteen levels to negotiate, each one getting harder. It resembles the Hunchback game from Ocean Software.

Finally with Humphrey, the idea is to keep Humphrey away from the bombs by making him jump and change the block colours.

Hare hunt

Kit Williams' Masquerade inspired a nationwide treasure hunt and many people must have been disappointed when Ken Thomas eventually found the hidden hare.

Now everyone will have another chance, Jeff Pennell bought the hare and set up Haresoft, a company established to promote Hare Raiser, a computer adventure game in two parts based on a new quest.

Versions for both the 64 and the unexpanded VIC-20 are being produced and each part will cost £8.95.

The first part will be available at the end of June, the second twelve weeks later and both parts of the puzzle will be needed to complete it.

The aim of the game is to name the secret location and two registration numbers. The first person to send in the correct solutions will have a choice of either the hare or £25,000 as the prize.

The games will be available by mail order.

3D turbo

Encounter, the 3D combat simulation game from Novagen Software is now available in the UK following its success in the USA. It retails at £9.95 for the cassette and £12.95 for the disk version.

You are piloting a spaceship when suddenly the planet inhabitants attack. The game incorporates eight different landscapes and three skill levels.

Paule Woakes converted Encounter to the 64 and included his own fast loading procedure – Novaload. The cassette version takes three minutes to load and features a screen display with a digital countdown during loading.

Contact: Hi-Tech Distribution Ltd, 213 Broad Street, Birmingham B15 1AY.

Help is at hand

Level 9 Computing have had so many queries from people having trouble with their adventure games that they have decided to experiment with comprehensive clue sheets.

The clue sheets provide alphabetical lists of the objects, creatures and the trickiest locations in each of their adventures – Lords of Time, Snowball, Colossal Adventure, Dungeon Adventure and Adventure Quest.

Finding the area of difficulty is easy and the problem solution will enable even the best adventurer to overcome a blindspot and continue with the game. The sheets are available free to players sending in a SAE to the company.

Contact: Level 9 Computing, 229 Hughenden Road, High Wycombe, Bucks HP13 5PG. Tel: 0494 26871.

Classic adventure

Classic Adventure, an adventure game first created in the 1970's is now available for the 64 on cassette from Melbourne House. It costs £6.95.

The computer acts as the player's eyes and hands, describing the immediate locations as you wander round attempting to gather the treasure hidden in the caves. Aggressive trolls, dragons and other shady characters lurk in the dark.

Melbourne House have developed a new cassette loading system for the 64 called Pavloda. It is named after its creator Andrew Pavlomanolakos and can speed a game loading time by up to six times.

Classic Adventure and the new sequel to Hungry Horace, Horace Goes Skiing, both incorporate the Pavloda system.

Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF.

Evil Dead

The first computer nasty is now in the shops. Palace Software have released The Evil Dead for the 64, at £6.99. The game was developed from the successful horror film of the same name and the game version aims to follow the plot of the film as closely as possible. The player first attempts to stop the evil spirit from entering the house and then the game's pace increases as the inhabitants are transformed into evil ghouls intent on destroying life. They can follow the player regardless of the moves he or she makes.

Their sister company, Palace Pictures, are currently looking at ideas for possible games in their film catalogue which includes films such as Merry Christmas Mr Lawrence, Diva and Basket Case.

Contact: Palace Software, 275 Pentonville Road, London N1. Tel: 01-278 0751.

Terminal

The latest game from Terminal Software is Triple Tournament and is the first of a series of programs from Ozisoft, an Australian Software House.

Triple Tournament comes on cassette and costs £7.95. The program includes three arcade games – West World, Space Race and Kamikaze and includes a menu selection feature that enables players to select either the same or a series of different games which can be played in a simultaneous competition either solo or with an opponent.

Contact: Terminal Software, Derby House, Derby Street, Bury BL9 0NW. Tel: 061-761 4321.

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CCI Master Gamer

The adrenalin was flowing as our contestants battled it out to become the CCI Master Gamer in our games competition held at the 5th International Commodore Show. Each contestant played for a limited time on our three games, with the scores from each game totalled to find our winners.

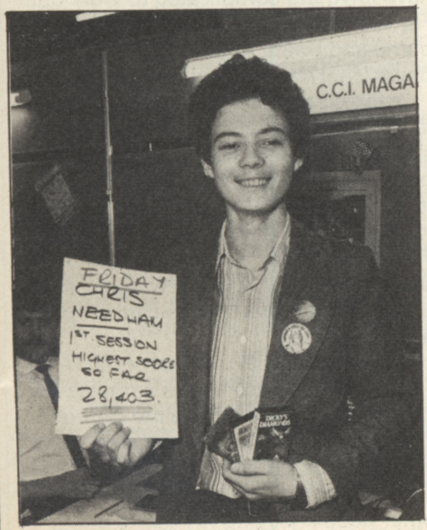
The Games

Audiogenic's Burning Rubber
Anirog's Ice Hunter
Romik's Dickys Diamonds

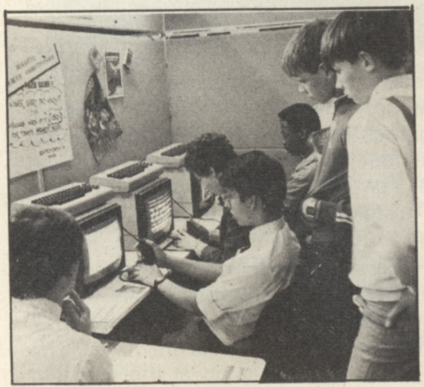
The Prizes

The contestant with the highest score of each two hour session won the game of his, or her, choice from each of the three software sponsors – Audiogenic, Anirog and Romik.

The contestant achieving the highest score of the day won £150 worth of software including games from Audiogenic, Anirog and Romik and £50 of software from Commodore.



Chris Needham, session winner with a score of 28,403



The crowds gather as the CCI Master Games battle hots up

The Winners

Day 1

Highest score per session
Matthew Green from Canvey Island with a score of 31510.
John Crockett from Canvey Island with a score of 21129.
Paul Swaddle from Richmond, Surrey with a score of 85260.

Highest score of the day
Paul Swaddle – 85260

Day 2

Highest score per session
Christopher Needham from London with a score of 28403
Dean Simmons from Harlow, Essex with a score of 23777
Rob Sadler from London with a score of 30750

Highest score of the day
Rob Sadler – 30750

Day 3

Highest score per session
David Stancliffe from Hampton, Middx with a score of 22120
Sean Hanley from London with a score of 20114
Eddie Collins from London with a score of 22995

Highest score of the day
Eddie Collins – 22995

Under Nines

To give our younger contestants some incentive, we gave away a game to the three highest scores achieved by contestants under the age of nine years. The winners were:
Mark Schroeder (age 9) from Orpington, Kent with a score of 16126
Stuart Campey (age 9) from Isleworth, Middx with a score of 8950
Joanne Campey (age 6) from Isleworth, Middx with a score of 6216

CCI MASTER GAMER

Our congratulations to Paul Swaddle of Richmond Surrey who achieved the title of CCI Master Gamer with the impressive score of 85260.

THANK YOU

We would like to express our thanks to:
Our competition sponsors Audiogenic, Anirog, Romik and Commodore
Microvitec for the loan of monitors
Kempston Electronics for the loan of joysticks
Rob and Sue for their invaluable help in running the competition
And last, but not least, to all our contestants who helped to make our CCI Master Gamer competition a success.

Some took a more relaxed approach to the competition

The young ones

Looking at the whizz-kids of today

Steve Back – Microdeal

Steve Back gave up a £300 a week job as a miner to pursue a career as a games programmer. It wasn't an easy decision to make, but it's one that Steve has never looked back on. Computers had always interested Steve, who bought an Acorn Atom at the end of '81. "It was a basic machine," recalls Steve, "But I had a lot of fun and within three months had written my first program – the only one I have ever written in Basic."

His first game was marketed, but didn't sell well. Steve's next games, written for the Dragon, sold so well that he almost retired on the spot.

When I wrote my first Dragon program I sent a dozen copies to software companies," says Steve. "Microdeal seemed to have their heads screwed on so I decided to go with them."

Within three months of the release of Steve's games, he had earned enough money from them to make the final decision to leave mining after 16 years.

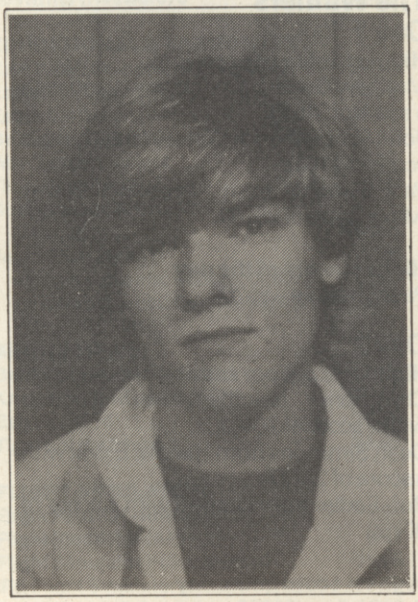
Steve now considers the 64 to be the machine of the moment and is the author of Microdeal's Cuthbert series of games. He says: "You think of a seed of an idea and the game develops around it. For example, with Cuthbert Goes Walkabout, the initial idea was to have a grid and paint it in."

Steve is not of the school of programmers who believe in writing everything down on paper first, although he does a lot of drawings. "The game I'm working on at the moment involves a series of rooms which I have drawn, converted to data and then typed in," says Steve.

"It's always best to do a little bit at a time," he continues. "The best way of de-bugging is not to get the bugs in the first place. I achieved that through experience (I've written a lot of programs and made a lot of mistakes) and through the fact that I only write 50/60 lines of coding at a time."

Still living off the income of his Dragon games, Steve employs a musician and an artist to create original results for his games. He comments: "The money it costs is well worth it for the time I save which can then be spent on design and coding."

Each game takes around 400 working hours to complete. Steve says: "I work a minimum of 10 hours a day – often longer – and I never have a day off. Depending on what I'm doing, I break when I'm ready."



Tony Crowther – Alligata

It was somewhat surprising to hear the author of successful Alligata games, Son of Blagger and Killer Watt, Tony Crowther, claim that he was never any good at programming! A lot of satisfied games players have now proved him wrong.

Tony had his first experience in programming on his school's BBC computer. He gained further experience working for a software house producing educational software before showing Alligata programs he had written on his VIC-20. Alligata then offered Tony a Commodore 64 and asked him to write some games for them.

"It took me six months to understand the machine," admits Tony. "The 64 is one of the best programming machines around – the only restriction is the Basic.

Now Tony seems to have got programming off to a fine art. He says: "Loco took me just two weeks to program, whereas something like Son of Blagger takes four weeks.

"There are a lot of differences between programming educational software and writing a game," continues Tony. "I always used to program in Basic, but now I use Machine Code to get the speed that is required in a game. On the whole, though, educational software is often built around a game."

Ideas for new games can come from anywhere – for instance, a recent walk in the park has inspired Tony to write a game based on a pigeon. Looking at other peoples games can also provoke a useful train of thought. Tony readily admits that the idea for his popular game, Son of Blagger, stemmed from seeing Manic Miner.

Once the idea is there, Tony prefers to type it straight into the computer. He explains: "I only put it down on paper if I have anything complicated to work out. For example I am working on a maze game and I want to have ropes hanging down. That I have to work out on paper."

It takes a relatively short time for Tony to write a game, but he does confess to spending 20 to 24 hours a day working on his computer! In fact when we spoke to Tony he claimed to have been working for two whole days without any sleep. This is obviously an exhausting way of doing things and when Tony does finally get to bed he says that he can sleep for up to three days.

In common with many programmers Tony says that once he has completed a program he is glad to see the back of it. "When I finish a game I may play it for a week or two, but after that I really can't stand to look at it again. I love watching other people playing my game though, it gives you a great feeling of satisfaction!"

Alan Steel and Campbell McCausland – PSS

The art of writing a computer game is almost a science, according to PSS programmer Campbell McCausland. He says: "The only way to write a successful game is to take the machine to its limits. A game should increase in difficulty as it progresses, there should be new things to see all the time – different levels should reveal different objects, all becoming more imaginative."

Campbell also compares writing a game to the writing of a book. "Machines are becoming more powerful," he says. "That means software has to be larger to take advantage. You can't hold it all in your head, it has to be properly planned and documented like a book."

A self-taught programmer, Campbell discovered computers at university. After a two and a half year stint at GEC, he tried his hand at programming games, the result was Gauntlet, a game that remained at the top of software charts for months. Now Campbell is employed full-time 'solving everyone elses programming problems' at PSS.

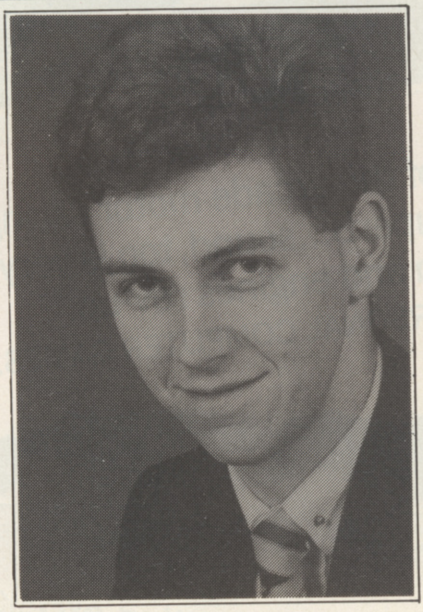
Fellow programmer Alan Steel entered the realms of programming when the British Aerospace factory he was working at closed down. A self-confessed war addict, Alan is currently working on a war game for the 64. "I don't think that available war games exploit the computers' potential," he comments. "A lot are purely text."

Alan's war game will follow the strategy of a board game – but with the computer fulfilling the function of the board. Alan comments: "A war game takes more time to produce. It requires a lot of research as it is based on reality." His game relates to the famous Battle of Midway, 1942, recently portrayed on the television.

"The film spoilt it for me." says Alan. "There were several incorrect technical points, such as the use of aircraft which weren't flying at the time."

Some may feel daunted at the prospect of the computer as an opponent, as in the case of Alan's war game, but he assures us that "we obviously have to give the human player a chance. The battle itself involved a lot of luck on the American's behalf."

Looking to the future, Campbell reveals that PSS will be launching a Dungeons and Dragons type game for Commodore by Christmas which, according to Campbell, "makes The Hobbit look like Pac-Man!".



Paul Mee – CRL

In his schooldays, Paul Mee was the kid the caretaker had to chuck out of school at 5.30pm every night. His fascination with the school computer overcame the typical schoolboy reaction of rushing out of school as soon as the final bell was rung.

After studying commercial programming at college, Paul joined Hewlett-Packard. "I soon got bored with conventional programming," says Paul, who is now CRL's Software development manager.

Not a fanatical game player himself, Paul says he has yet to see a game that has more than one evening's appeal. He explains CRL's approach to a successful game: "If you think of a brick – most people see it as a lump that builds a house. A more imaginative approach is to see it as something that stops a car rolling down a hill, or something for a mouse to hide behind. That's the imaginative approach we take at CRL."

Paul takes his ideas from everyday life. He says: "You could be sitting on a bus eating sweets and think 'what a great idea for a game'." In fact Paul is now working on a game based on the Liquorice Allsorts character Bertie Bassett, where Bertie has to package and deliver sweets safely to the supermarket.

"I've probably got a weird imagination," admits Paul. "Of all the ideas we come up with, about 80 per cent get thrown out and we take the cream off the top."

Everything is worked out on paper before Paul moves on to the computer. "It takes about three weeks to set it all out on paper," comments Paul. "We do a story board considering 'what will happen if ...' and a big block diagram to ensure there are no holes in the program. After the paperwork we usually aim for a nine week turn around."

Paul is also involved in the programming of the 64 version of CRL's next major game title, War of the Worlds, together with two other programmers. It was launched this month with the 64 version following in the Autumn.

Jeff Wayne is also heavily involved in the computer version of War of the Worlds. Paul says: "We want to make sure it is a Commodore game in its own right. With the sound capabilities of the 64, much of Jeff Wayne's original score will be included."

It is not always easy to work with other people on a program. Paul admits: "The three of us know how far we can stretch a game, but obviously we do have arguments. I'm sure Jeff wouldn't mind me saying that he isn't always easy to work with – after all he owns the world!"

To date, Atari's most astonishing game is Pole Position… If you are only going to buy one game, then this is the one you should get.
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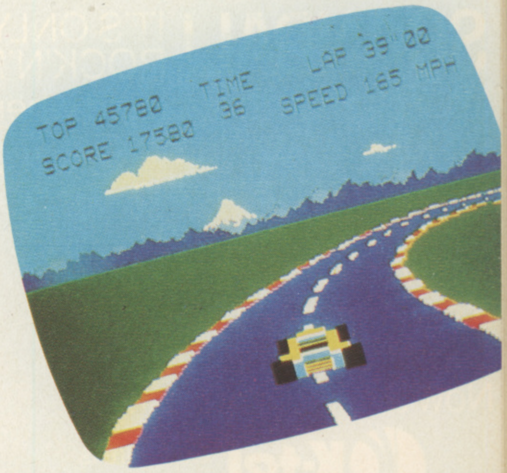
What can we say?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We're overwhelmed. Though we should just add that with Atarisoft, you can now play Pole Position* on the Commodore 64, BBC and Spectrum computers, as well as on all Atari® systems. Oh, and we're giving away free a Grand Prix kit and full colour wall chart with every game.

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Hit and myth

Zap the aliens and enter into a mythological world in this month's selection of arcade and adventure games for the VIC-20 and the 64

CUTHBERT IN SPACE

Our hero, Cuthbert, has been sent on a looting mission in outer space. First he has to collect fuel pods to enable him to leave each planet visited – constantly under seige from the Intergalactic Police Force and also under a time limit.

Once this stage is successfully completed, treasures fall from the top of the screen and must be caught in Cuthbert's craft before they reach the bottom where they burn up. This time he's up against the Moronians who are determined to keep their treasure. On Cuthbert's return to the mothership beware craft malfunctions – you will then have to find vital spares before a bomb, planted by the Moronians, detonates. (If your hands weren't occupied finding the location of the spares, you'd be biting your nails at this point.)

An addictive game with the option of switching between joystick and keyboard control. Available on cassette or disk, there are 12 levels although you can choose to start from any level up to level 8. A pause feature is incorporated – useful for those irritating interpretations.

Title: Cuthbert In Space
Programmer: Steve Back
Contact: Microdeal, 41 Truro Road, St Austell, Cornwall. Tel: 0726 3456
Hardware: CBM 64, cassette recorder or disk drive, joystick
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ****
Description: Collect fuel and treasure and return to mothership
Price: Disk – £9.95, cassette – £8
CCI rating: ***

ALICE IN VIDEOLAND

This game is a winner! Alice in Videoland has successfully incorporated some of the brilliant ideas featured in Alice in Wonderland and will capture the imagination of most players.

The game begins with Alice falling down the white rabbit's hole. She reaches the gaudy wallpaper where coloured keys, cakes and bottled potions float around. The idea is to gather these in a basket. Part two of the first of four scenes sees Alice searching for a door to pass through and success depends on the number of items she collected in part one.

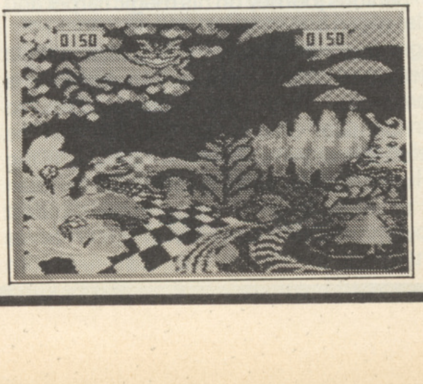
The second part features a scene with extremely good colourful graphics – the Cheshire cat, magic mushrooms and a giant smoke-puffing caterpillar with his hookah. Catching bread-and-butterflies and rocking horse flies win points, but Alice must avoid the seeds, spat out by flowers or else she shrinks.

Strategy and skill are important in scene three. The terrible twosome, Tweedle-dum and Tweedle-dee, and the Jabberwocky create trouble for Alice as she manoeuvres across the chess board under the white knight's protection.

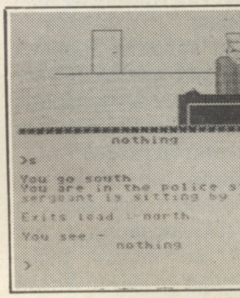
Once the Jabberwocky lands on Alice, the final scene is played. A sort of pinball extravaganza with Alice and her flamingo trying to knock the ball into the card soldier hoops. The Queen of Hearts flattens runaway balls.

This addictive and enjoyable game is suitable for all ages.

Title: Alice in Videoland
Programmer: John Fitzpatrick
Company: Audiogenic, PO Box 88, Reading, Berks. Tel: 0734 586334
Hardware: 64, disk drive and joystick essential
Type of game: Arcade adventure
Graphics: *****
Sound: *****
Playability: *****
Description: Guide Alice through her adventures in Videoland
Price: £12.95 (disk)
CCI Rating: *****



URBAN UPSTART



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nothing

>s

You go south
You are in the police station. A
sergeant is sitting by the door

Exits lead - north

You see -
        nothing

>
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Scarthorpe, home of nasty roughs and toughs has you snared. Only one way out and that's what you have to find. It's not easy with the hospital and the police cells to contend with.

You start in a house on Grime Street and if you have any street credibility, leaving town is a cinch. The screen is divided into graphics and text and helpful objects or aggressive confrontations lurk in various locations. There are few red herrings and most of the objects will be of some help.

Without giving anything away, in this game you need to use every speck of common sense that you may possess to get out. It's not that difficult – rabid football fans, dungarees and red tape can all be dealt with in a useful fashion.

Richard Shepherd seems to deal with original adventure games and this is one of his better ones. A worthy addition to an adventure collection.

Title: Urban Upstart
Programmer: Richard Shepherd
Company: Richard Shepherd Software, Elm House, 23-25 Elmshott Lane, Chippenham, Slough, Berks.
Tel: 06286 63531
Hardware: 64, cassette recorder or disk drive
Type of game: Adventure
Graphics: ****
Sound: ***
Playability: ****
Description: Get out of town – if you can!
Price: £6.50 (cassette), £9.50 (disk)
CCI Rating: ****

TWIN KINGDOM VALLEY

Twin Kingdom Valley will satisfy any yearning for adventure you may have.

The action takes place in a valley belonging to two kings. This mountainous mythical region is covered in forests and moors and is largely inhabited by strong elves, trolls with broadswords, witches, castle guards and assorted creatures such as bunnies, skinny squirrels and mice.

The computer gives you the possible directions and you key in which way you want to go and what you want to do with any objects that appear.

One of the most attractive features about the game is the graphics. Very colourful pictures with moving clouds and animals illustrate your whereabouts and in many cases offer vital clues.

Castles, dungeons full of bones, grates, secret doors, and magic lakes are just some of the 175 locations in the game. Treasures like crystal balls, jewelled crowns, bags of silver, lie all over the place and placing them in the Sword Inn will ensure their safety.

Weapons, jugs and other items also help you on your way.

However the rather aggressive valley occupants continually try to kill you. Helpful tip – a polite coward will do much better than a rude aggressive and brave adventurer!

We enjoyed playing this game, it's well constructed, colourful and full of surprises.

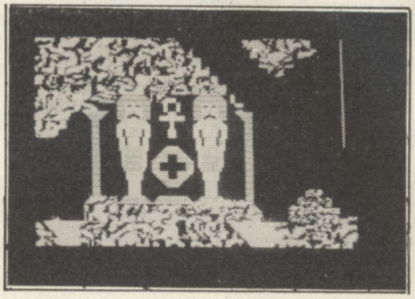
Title: Twin Kingdom Valley
Programmer: Trevor Hall
Company: Bug-Byte Ltd., Mulberry House, Canning Place, Liverpool L1 8JB. Tel: 051 709 7071.
Hardware: 64 and cassette recorder
Type of Game: Adventure
Graphics: ****
Sound: n/a
Playability: ****
Description: Roam around the valley collecting as much treasure as possible without being killed
Price: £9.50
CCI Rating: ****

CAVERNS OF KHAFKA

Lurking deep inside the caverns of the Pharoah Khafka's tomb, the fabled treasure lies waiting to be discovered. Keys to unlock this potential wealth are hidden all over the cavern and change positions each game. You, the brave opportunist adventurer set out to collect these keys.

The joystick is essential to the game as it controls all of your movements – crawling, jumping, climbing ropes and walking. On the way to the Kings Chamber, site of the fabled riches, you encounter falling boulders, deadly scarab beetles, pools of molten larva and other horrible obstacles. Boulders and insects only affect you after they have hit you five times, but watch out for the bubbling larva! You have to explore all the tunnels and remnants of the Pharoahs tomb because the keys change locations every game.

Caverns of Khafka is a compelling, interesting game with some great graphic and sound effects. Recommended for anyone wanting a challenging adventure which relies on graphics rather than words.



Title: Caverns of Khafka
Programmer: American author
Company: US Gold, Unit 24, Tipton Trading Estate, Bloomfield Road, Tipton, West Midlands DY4 9AH.
Tel: 021 520 7591
Hardware: 64, disk drive or cassette recorder, joystock essential
Type of game: Graphics Adventure
Graphics: ****
Sound: ****
Playability: *****
Description: Collect the keys and unlock the hidden wealth in the Pharoahs chamber
Price: £8.95 (cassette) and £12.95 (disk)
CCI Rating: ****

MAGIC CARPET

Greedy evil Sultan Abulla has stolen the family treasure and hidden it in the depths of some mountains in a dark cave. Noble Ali vows to undertake the perilous journey on his magic carpet and retreive it.

It is not easy, a lot of patience, split second timing and a very steady hand is needed. There are various caves to negotiate before the treasure can be obtained. In the first one boulders, falling spears and a moving saw blade threaten to knock Ali off his carpet at the slightest opportunity. Obstacles in other caves include the deadly bats, acid rain from stalactites, moving floors and, of course, the fire spitting dragons guarding the treasure. The magic lamp is used to get back.

Moorish music and some farily good graphics brighten the game up. Magic Carpet will appeal to anyone who enjoys a challenge, but patience, infinite care and quick movements are very necessary qualities.

Title: Magic Carpet
Programmers: David and Richard Darling
Company: Ace, 82-84 Peckham Rye, London SE15 4HB. Tel: 01-639 0331
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Description: Rescue the treasure hidden in the mountain depths
Price: £6.90
CCI Rating: ***

PIGS IN SPACE

Mummy pig's little piglets have been captured and you have to help her rescue them. Nasty space wolves drop from their intergalactic space ship in heli-packs and parachutes and throw space dust at Mrs Pig. Can you aid her in her plight?

Piggy friends lower mummy pig down from a platform in a basket and armed with a pig lazer she has to shoot 20 wolves whilst avoiding the space dust. If the wolves reach the ground and touch her she somersaults and disappears for ever. You get three chances to rescue the piglets. Once mummy pig has shot enough wolves, she must run along the ground avoiding atomic mortar bombs and rescue the piglet. She then moves onto the next level.

Fairly amusing game with some good graphics and smooth movement, but lacks enough substance to make it a game worth playing more than couple of times.

Title: Pigs in Space
Programmer: David and Richard Darling
Hardware: 64, cassette recorder and joystick optional
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Description: Help mummy pig rescue her piglets
Price: £6.90
CCI Rating: ***

STAR DEFENDER

Quite a sophisticated, well-thought out game for the VIC-20. It's written for those arcade fans who enjoy merciless killing, zapping aliens and generally destroying everything in your spaceship's sight.

Alien commando are attacking planet Earth with a formidable force of mutants, UFO's, space hums and bright green landers. Purple humanoids lie about on the planet surface with no means of defence and are carried off by the landers. Your task is to prevent simply by shooting the aliens and catching the humans before they drop.

Rectangular Transporters take you to a site where humans are being abducted. Special features to help you in your fight: Inviso to make the fighter indestructible for five seconds, smart bombs to destroy all aliens on the screen and a radar to indicate what is going on elsewhere in the game.

Both joystick and keyboard have to be used in the game which tends to have you wrapped up in a knot when the going gets tough, but as space games go this one isn't too bad.

Title: Star Defender
Programmer: German author
Company: Anirog, 29 West Hill, Dartford, Kent. Tel: 0322 92518.
Hardware: VIC 20 with 16K expansion, cassette recorder and joystick necessary.
Type of game: Arcade
Graphics: ****
Sound: ***
Playability: ****
Description: Prevent the alien landers kidnapping the purple humanoids from earth
Price: £7.95
CCI Rating: ****

SUPER SPY

Dr Death is threatening the world with destruction and if you've ever fancied being James Bond, secret agent, now is your chance. Super Spy has all the thrills and spills of a real life spy mission except of course the voluptuous females.

Super Spy differs from the usual Dungeon and Dragon games and appears to be an original idea. The game is in four parts and offers variety on each level. Your first task is to locate Dr Death's hideaway. Choose three weapons from a selection and use them carefully to eliminate muggers and other enemy agents on your search through the cities of the world. Clues to the hideout whereabouts are in the form of anagrams and coded messages. Never try to run away, remember that you're British. Once the island has been located, you pass onto level two.

On the island find the underground maze and in level three navigate through a 3-D graphic maze to find the deadly missile. On the final level break the code and save the world. Super Spy will appeal to most adventure gamers and although it is not as complex as The Hobbit it is still an enjoyable challenge.

Title: Super Spy
Programmer: Richard Shepherd
Company: Richard Shepherd Software, Elm House, 23-25 Elmshott Lane, Chippenham, Slough, Berks. Tel: 06286 63531
Hardware: 64, cassette recorder or disk drive
Type of game: Adventure
Graphics: ****
Sound: ****
Playability: ****
Description: Break the code and save the world
Price: £6.50 (cassette) and £9.50 (disk)
CCI Rating: ****

PANIC PLANET

Panic Planet is an exciting version of a popular arcade game and is great fun to play.

The screen takes the familiar form of platforms stretched across the screen with ladders for the little man to move up and down. The idea is to eliminate all the alien monsters from each screen by digging holes and trapping them. Once all the monsters are gone the next level is reached. When a red alien monster resembling a tomato with arms falls down a hole, he holds onto the edges until you fill the hole in again to gain points and successfully kill him.

On higher levels the monsters change colours and become more difficult to kill if you don't fill the hole in properly. On the third level a green alien appears with two red ones and has to fall down two platform levels before dying. Similarly with the white monster appearing on an even higher level, he has to fall through three levels. Extra points can be gained if one monster falls onto another killing both simultaneously.

Every level has a time limit controlled by an oxygen meter. If the air runs out your man falls over and breathes his last breath. It's a game suitable for players of all levels of ability and should keep you amused for a while.

Title: Panic Planet
Programmer: Stephen Evans
Company: Alligata Software Ltd, 178 West Street, Sheffield S1 4ET. Tel: 0742 755005
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: *****
Description: Trap the alien monsters with your spade
Price: £7.95
CCI Rating: ****

BUMPING BUGGIES

In Bumping Buggies, a car is driven as fast as possible along a track without crashing into barriers and avoiding stretches of water.

It follows the theme of some of the original arcade racing car games and is addictive. The player controls the buggy with the joystick and a speed indicator at the side of the screen indicates if the car can take off or not. If it is going at more then 100 mph, the car can jump over obstacles and other cars.

The player gets five lives and can travel along twenty different tracks through four different seasons. It is possible to force cars to the side for bonus points, but too much bumping causes the car to skid and crash into a barrier. The screen scrolling is a bit messy, but on the whole the graphics are effective and colourful. The sounds indicate crashes adequately. A high score screen has space for three scores.

Addictive playing for someone who enjoys guiding a car through obstacles at a fast pace.

Title: Bumping Buggies
Programmer: Richard Clark
Contact: Bubble Bus Software, 87 High Street, Tonbridge, Kent, TN9 1RX. Tel: 0732 355962
Hardware: CBM 64, cassette player and joystick
Type of game: Arcade.
Graphics: **
Sound: **
Playability: ****
Description: Drive the car as fast as possible through the seasons of the year without crashing.
Price: £6.99
CCI Rating: ***

BONGO

Bongo Super Mouse, in an attempt to win the princess' hand in marriage by finding some stolen diamonds, has stumbled across the thieves hideout. The cave is guarded by cunning wolf-like creatures which can do things that Bongo can't making evasion a real test of nerves and good timing.

The den is constructed out of platforms and Bongo has to make use of ladders, trampolines, slides and transporters to successfully collect the diamonds and evade the monsters. Once Bongo has collected one flashing diamond another one appears elsewhere and as soon as he has got five, he goes onto the next screen.

Each one gets progressively more difficult with different layouts. Points are gained for accumulating the diamonds and catching the letters which float down making up the word Bongo. There are three levels of difficulty and each one has six screens. In the second and third levels, two monsters appear.

Bongo requires a lot of quick thinking and fast action. The graphics are very appealing – Bongo has a long curly tail and the robbers have long snouts and overalls and best of all there is no mindless killing. A game for the family.

Title: Bongo
Programmer: German author
Company: Anirog Software, 29 West Hill, Dartford, Kent. Tel: 0322 92518
Hardware: VIC 20 with 16K expansion, cassette recorder, joystick necessary
Type of Game: Arcade
Graphics: ****
Sound: ***
Playability: ****
Description: Bongo must find the stolen diamonds to win the hand of the princess
Price: £7.95
CCI Rating: ****

AQUANAUT

The action takes place underneath the sea in the dreaded caves of Shallic. You are in charge of the last member of the Aquanaut patrol and, armed with torpedoes and depth charges, it's your task to survive and penetrate the deepest cavern.

Surviving is not an easy task. Even the most skilled and experienced of arcade fanatics may find this game more than a match. Actually entering the caves is a real test of patience, the enemy sea tanks seem to have supernatural powers and the heat seeking missiles stay in the sky for a few seconds even after you've hit them. Dodging missiles and hovering mine layers sometimes seems to need more luck than skill, but we did observe some method in the madness of the enemy assault.

Once in the caves, long convoluted tunnels with enlarged caverns contain rockets, more heat seeking missiles and a myriad of other colourful but deadly things lurking in corners ready to rush out and blast you at the slightest provocation. The music is excellent, the screen scrolling is smooth and it is possible to choose between three and nine lives. (Tip: choose nine lives!)

The aim is to eventually return to base, but we admit we didn't quite get to the end. It's no fun for an amateur, but an experienced arcade player looking for a real challenge may well find it is just the thing.

Title: Aquanaut
Programmer: Ian Gray
Company: Interceptor Micros, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ***
Sound: *****
Playability: **
Description: Dodge and shoot evil powers in the Shallic Caves
Price: £7 (cassette) and £9 (disk)
CCI Rating: ***

QUASIMODO

Evil Count D'Arcy has captured Esmerelda and locked her up in a palace bristling with guards.

Quasimodo, the guardian of the cathedral bells, isn't happy about it and decides to rescue her – no easy task as the guards are armed with spears and fire balls. There are 15 different walls to tackle and each one seems to get more difficult and fraught with danger. For instance, the very first wall is just a matter of jumping over the gaps in the wall, but on the third wall Quasimodo has to avoid the spears which suddenly rise up (causing a rather nasty accident if they spear him – he turns red, green and yellow) and arrows. I didn't get onto the fifteenth wall, but I imagine the player will have to think fast and be pretty nimble on the keyboard controls to successfully rescue the fair maiden.

Hanging at the end of each wall is a bell which has to be rung, the faster it rings the higher your score.

Bonus points can be picked up if the bell is rung five times in succession. The graphics are fairly good and there are a few catchy tunes to brighten it up. Quasimodo is addictive and good entertainment.

Title: Quasimodo
Programmers: David and Richard Darling
Company: Ace, 82-84 Peckham Rye, London SE15 4HB. Tel: 01-639 0331
Hardware: VIC 20 with 8K expansion and cassette recorder
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Description: Quasimodo must rescue Esmerelda from a palace swarming with guards armed with fireballs and spears.
Price: £6.90
CCI Rating: ***

SPIDER AND THE FLY

Ever fancied being a spider? Now's your chance, weave a web round the flies and win lots of points.

The player is in control of a length of spider silk and to make a successful capture he must completely encircle the green and blue flies, worth different point totals. The silk is not elasticated so it will only grow to a certain length before running back on itself – the flies have to be pursued!

The aim of the game is to win points and progress to higher levels. Every thirty flies (there is a fly countdown on the screen) you pass onto the next level and the game gets harder. An ever present pointing hand breaks the web if it touches and the number of insecticide cans spraying their deadly substances increases as the game levels advance.

Although each player gets three lives it is quite difficult for anyone to lose a life, especially an experienced arcade fan.

Avoiding dangers and trapping flies proved to be relatively simple. Not a game to get the adrenalin going, but it's still good clean fun.

Title: Spider and the fly
Programmer: Canadian author
Company: Interceptor Micros, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ***
Sound: ****
Playability: ***
Description: Trap flies in your web
Price: £7 (cassette) and £9 (disk)
CCI Rating: ****

SON OF BLAGGER

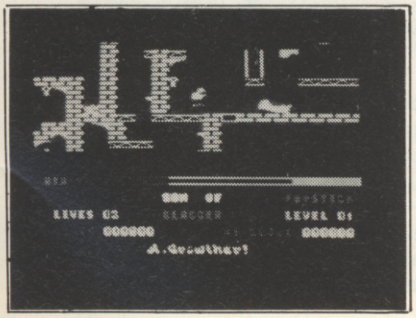
Killer bushes, dissolving floors and weird white boots all help to make this one of the most exciting and compelling games we have seen for the 64.

Slippery Sid, prodigy of Roger and Dodger in 'Blagger' (also by Alligata) has forced his way into the National Security HQ and has the desperate task of escaping. The building resembles a complex maze with moving conveyors, platforms, slides and ladders. Altogether there are twelve rooms to complete and countless golden keys hanging on ceilings and walls have to be collected as Sid moves round the course.

Excellent screen scrolling, lively graphics and jolly tunes enhance the game and careful thought is needed to negotiate the pitfalls. The player controls his movements upwards, forwards or up and obstacles are numerous. Red hearts, scissors, shark jaws move across the screen making your life difficult and white boots and ghosts traversing the floors are real killers.

Each player gets three lives and Son Of Blagger will be a real test to anyone fancying themselves as a skilled arcade ace. It should provide a few hours of amusement to grown-ups and kids alike.

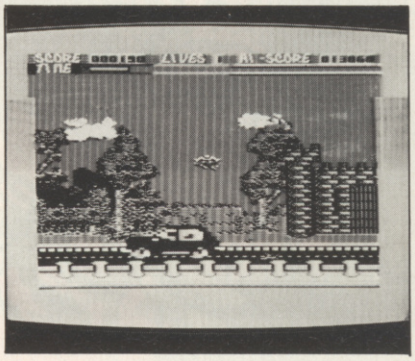
Title: Son of Blagger
Programmer: Tony Crowther
Company: Alligata Software Ltd, 178 West Street, Sheffield S1 4ET
Tel: 0742 755005
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ****
Sound: ****
Playability: *****
Description: Negotiate twelve rooms and collect the golden keys
Price: £7.95
CCI Rating: ****



POTTY PIGEON PREVIEW

Based on the theme of building a nest with twigs, Potty Pigeon is actually very entertaining.

Big black motor cars drive back and forth over a twig strewn road while potty pigeon swoops down in attempt to pick them up. The pigeon destroys the cars by dropping something white (!) on them and leaves the road clear for his twig picking activities.



But, even if he does avoid a nasty end and manages to keep the twig in his beak, brown hawk-like birds will try to knock it out. The pigeon flies across a background of excellent graphic effects – shops, castles, wizard dev (?), garden walls and trees.

The actual nest sits on one of the trees and the aim is to fill it up with twigs. If you succeed, you go on to the next level of difficulty. In the later stages of the game the cars get faster, the brown bird more aggressive and some red wasp-like creatures probably start to get nasty. Aeroplane activity also starts to increase.

It's a cleverly programmed game, good screen scrolling, three dimensional graphic effects and quite a harmless theme. Potty pigeon should suit most arcade players.

Title: Potty pigeon
Programmer: Tony Crowther
Hardware: 64, cassette player, joystick essential
Type of game: Arcade
Graphics: *****
Sound: ****
Playability: ****
Description: Pick up twigs and build a nest
Price: To be decided
CCI Rating: ****

BEACH HEAD

Beach Head has been taken over by a ruthless dictator and the fortress Kuhnlin is guarded by a fleet of warships and a land patrol. You are in control of your own land and sea forces and have the task of penetrating his defence system and destroying the fortress.

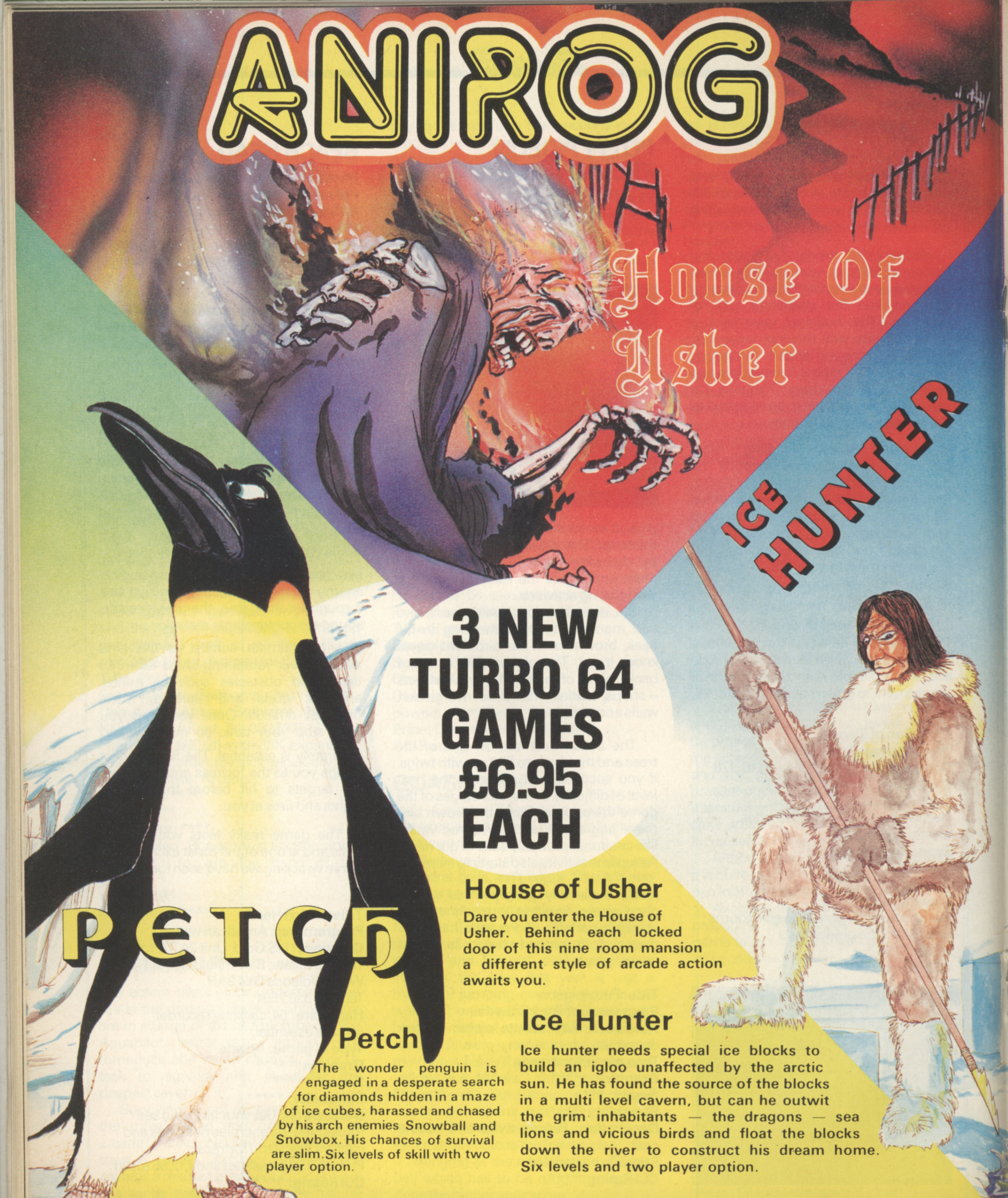
The action takes place over a series of screens and each sequence involves different arcade skills to successfully complete them. Your first decision is whether to confront the enemy head on or negotiate the secret passage with ten ships. Land mines and torpedoes make this passage rather hazardous.

Once through the passage (if you choose that option) the fleet has to be defended from airborne fighter squadrons. Your guns move up and down and controls at the bottom indicate what angle you are shooting at – whether you aim too long or short. The swooping enemy aircraft are visually effective and throughout the game, the graphics and sound are convincingly realistic.

The penultimate conflict is the land assault, your remaining ships turn into tanks and obstacles such as mines, anti-tank guns and bunkers make progress difficult. Once you start you can't stop your tank, so manouvering accurately is essential. The final conflict brings you to the fortress and you have ten targets to hit before the cannon sights and fires at you.

The game really tests your arcade skills and is one of the most exciting and nerve wracking we have seen for a time.

Title: Beach Head
Programmer: American writer
Company: US Gold, Unit 24, Tipton Trading Estate, Bloomfield Road, Tipton, West Midlands DY4 9AH.
Tel: 021 520 7591
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: *****
Sound: *****
Playability: *****
Description: Get your land and sea forces past the enemies defences and capture the island fortress
Price: £9.95 (cassette) and £12.95 (disk)
CCI Rating: *****



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Dare you enter the House of Usher. Behind each locked door of this nine room mansion a different style of arcade action awaits you.

Ice Hunter

Ice hunter needs special ice blocks to build an igloo unaffected by the arctic sun. He has found the source of the blocks in a multi level cavern, but can he outwit the grim inhabitants — the dragons — sea lions and vicious birds and float the blocks down the river to construct his dream home. Six levels and two player option.

Petch

The wonder penguin is engaged in a desperate search for diamonds hidden in a maze of ice cubes, harassed and chased by his arch enemies Snowball and Snowbox. His chances of survival are slim. Six levels of skill with two player option.

Also available on Disk at £9.95

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Level 9 adventures are available at £9.90 from good computer shops, or mail order from us at no extra charge. Send order, or SAE for catalogue, to the address below – and please describe your micro.

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REVIEWS

"Adventures which have a fast response time, are spectacular in the amount of detail and number of locations, and are available to cassette owners . . Simply smashing!" *– Soft, Sept 83*

"**Colossal Adventure** is included in Practical Computing's top ten games choice for 1983: "Poetic and tough as hell." *– PC, Dec 83*

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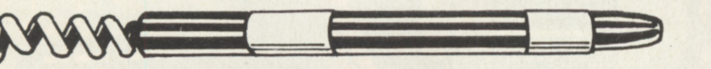
"**Lords of Time.** This program, writen by newcomer Sue Gazzard, joins my favourite series and is an extremely good addition to Level 9's consistently good catalogue As we have come to expect from Level 9, the program is executed with wonderful style – none of those boring "You can't do that" messages! Highly recommended." *– PCW, 1st Feb 84*



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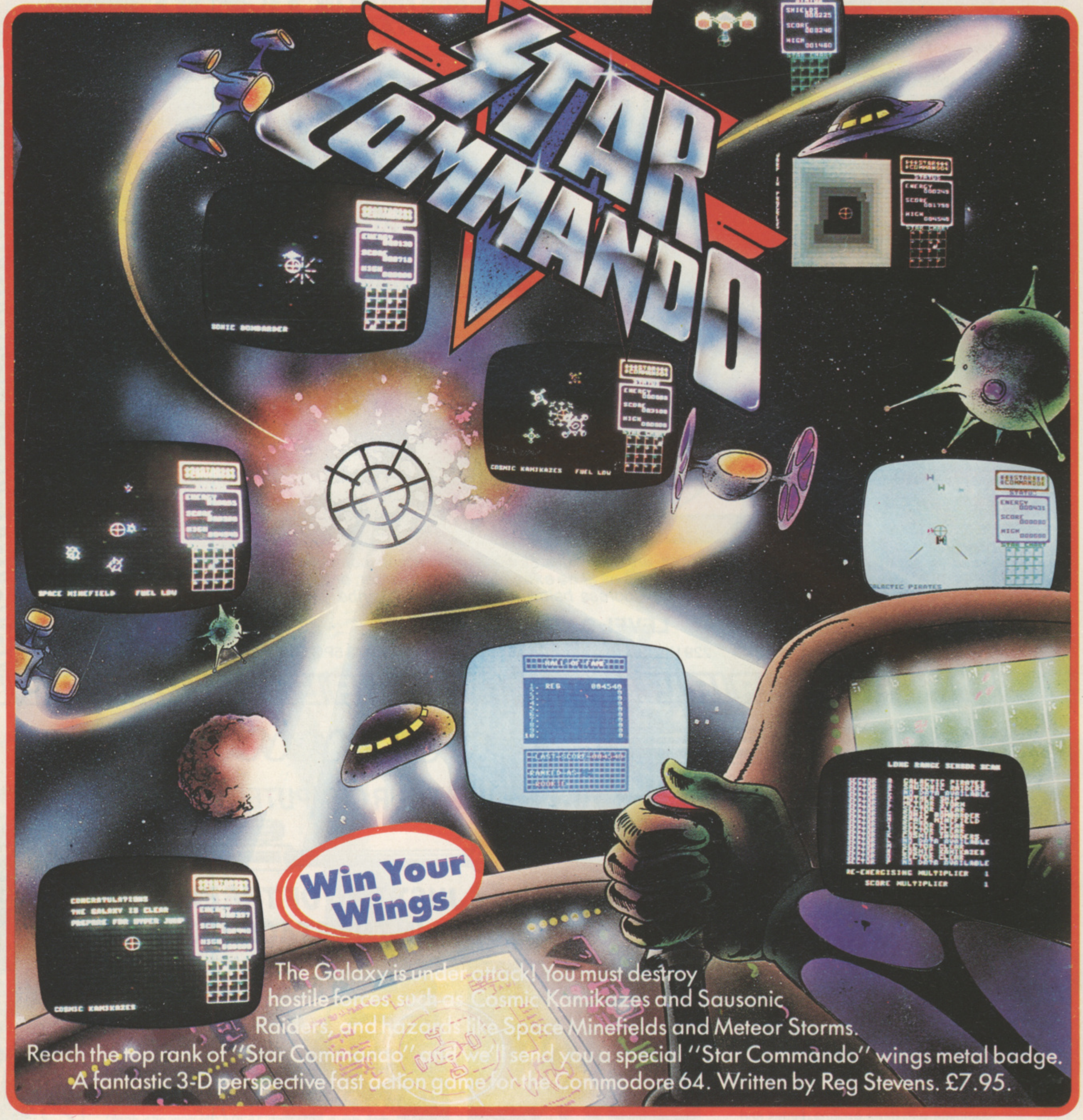
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Terminal Software, Derby House, Derby Street, Bury BL9 0NW, Manchester, England. Tel. 061-761-4321

Urban Upstart puzzle

This month we are giving away no less than 200 copies of Richard Shepherd Software's Urban Upstart adventure absolutely free! You won't need to have played the game before, but you will need a logical brain.

All the clues you will need are included below in addition to a grid which you may find useful in solving this logic puzzle. The first 200 entries correctly completing the table below will receive a copy of Urban Upstart. Please indicate on the entry form whether you would prefer the cassette or disk version. Also bear in mind that you can only play Urban Upstart on the 64.

The Puzzle

A group of people played Urban Upstart one rainy Sunday afternoon. Each played for a different length of time, each obtained a different score and each got stuck at a particular obstacle in the game.

Your task is to complete the table below showing who had which score, which obstacle defeated them and after how many hours.

The grid below can be used to help you by entering a √ in a square showing a statement known to be true, (i.e. a √ in the box showing Lynne = 4½ hours), and a X in a square showing a statement known to be false (i.e. Lynne playing for any period other than 4½ hours).

Here are the clues you will need:

1 Lynne played Urban Upstart for 4½ hours. Neither Neil nor the person who played for 4 hours was arrested for littering the highway.

2 Richard managed a score of 11. The person arrested for indecent exposure did not get a score of 5.

3 Peter encountered a gang of football hooligans after 3½ hours.

4 The man rushed to hospital after sinking in the mud gained a score of 15.

5 The person arrested for loitering with intent played for 5 hours, and had a score greater than 10.

6 The person who played for 3½ hours had a score of 13.

	SCORE					PROBLEM					HOURS				
	5	7	11	13	15	Exposure	Littering	Loitering	Sinking	Football Fans	3	3½	4	4½	5
Neil															
Tracey															
Peter															
Richard															
Lynne															
HOURS: 3											X	X	X	X	X
3½											X	X	X	X	X
4											X	X	X	X	X
4½											X	X	X	X	X
5											X	X	X	X	X
PROBLEM: Exposure						X	X	X	X	X	X	X	X	X	X
Littering						X	X	X	X	X	X	X	X	X	X
Loitering						X	X	X	X	X	X	X	X	X	X
Sinking in mud						X	X	X	X	X	X	X	X	X	X
Football Fans						X	X	X	X	X	X	X	X	X	X

YOUR TASK IS TO COMPLETE THE TABLE BELOW.

NAME	SCORE	PROBLEM	TIME
NEIL			
TRACEY			
PETER			
RICHARD			
LYNNE			

Name:

Address:

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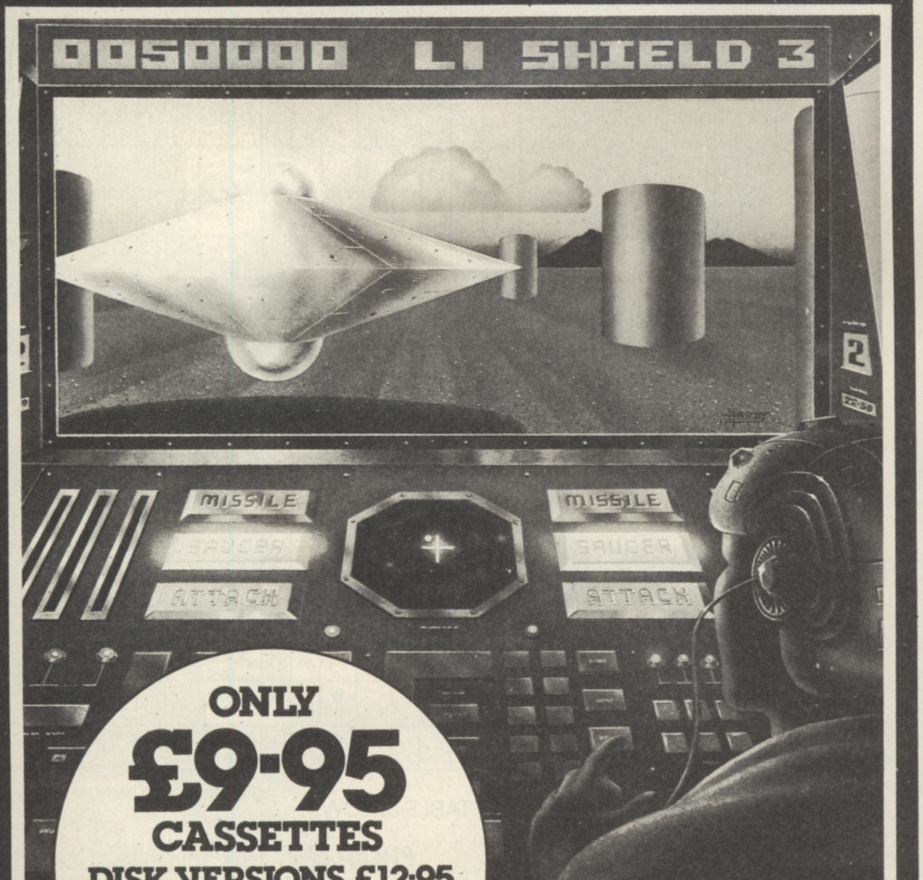
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An alien saucer flashes onto your view screen. Your ATTACK indicator flashes and a bolt of raw energy smashes into your protective screen. Your screen can only absorb four hits of this intensity. You must fight back!

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Be adventurous

Writing an adventure game is not as hard as writing an arcade so let your fingers do the walking as we look at the theory behind writing an adventure.

You can really let your imagination run wild and fulfil dreamlike fantasies in deciding where your adventure is to take place and what task the intrepid adventurer must complete. Will it be an eerie underground location dusted with the cobwebs of the years, concealing the skeletons of less successful adventurers' expressions fixed in a toothless grin of terror. Or maybe you favour a mystical location with fairytale spires and musical raindrops?

Will your adventurer have to discover the legendary priceless gem for which hundreds have died a ghastly death, or rescue the beautiful princess captured by the mutant ferret bent on world destruction?

The next decision to make is whether to write a text-only adventure or to incorporate graphics. Graphics can be helpful to the adventurer. For example if you find yourself in a room, you may have to go through a whole chunk of text before realizing that you have been there before. With graphics you would recognise it immediately. On the other hand graphics can prove complicated. It's easier to describe a finely cracked vase inscribed with the sign of the scorpion with text than to attempt it graphically.

You must also decide what kind of movement you are going to incorporate. Whether it will be a single letter, one or two word commands, or one verb followed by a complicated object description. Will the program accept abbreviations? What kind of message will be given if it doesn't understand an instruction?

The standard 'I don't understand' is very boring. As an example, if the adventurer types in rub stick, he may get the reply 'I do not know how to rub a stick,' or even 'I've never seen a stick around here.' If you go for the more interesting reply be careful that you don't give away any clues. The Hobbit is a prime example of this – when you try to find the elf, you type in 'follow elf' and get the response 'I don't see the dead elf.' What a give away!

You will now have made several important decisions, but there's more to do before you start programming. Choosing your tense is important – is it to be 'you are ...' or 'I am ...' Don't forget to stick to the same tense throughout the game.

You've chosen your location and now you must decide how big the map will be and how to store it. Also how to link one place to another. If the adventurer moves north the map will determine where he, or she, ends up. If the map is permanent, ie it doesn't change in games, you are strongly advised to put it all down on paper.

How are you going to store room, or location, descriptions? Will each have a different description. A typical example is a program that contains a maze. When the adventurer finds himself in the maze it may well just say 'there are twisty tunnels all around you.'

Decide if the entire game is going to be based on the map, or maze, in which case it will be very big and just finding the way around is time consuming. Alternatively you could make it simple, but with problems blocking routes – fire-breathing dragons guarding passageways or doors that can't be opened without the necessary key or magic words.

A word of advice for those of you who favour an element of magic and puzzles. A solution which is obvious to you may be inconceivable to others. So be sensible, after all, if an adventurer can't get past a certain point through the lack of the magic word he'll give up sooner or later.

It's back to your vivid imagination again in creating the objects that appear in your adventure. Some of your objects will be permanent fixtures, either part of the room description or part of the scenery which may provide a clue.

Objects should be stored with their description with a separate description and position on the map. Store information on whether objects can be picked up or whether they conceal another object. What happens if they are dropped? (You can have fun here!)

Maybe some of your objects are heavier than others and determine how much else you can carry. Alternatively some objects may enable you to carry more, such as a basket or a jug which can be filled. Are any of your objects going to affect other objects. For example can you only get past the snake if you offer it the bird?

If an object prevents you from entering a room, it is often necessary to store the last position and use that as the only way the adventurer can get out.

Objects can also be other people who may be capable of moving around. This makes the adventure complicated but interesting. Will you introduce a wise old guru who will provide helpful advice or perhaps a slug-like creature leaving a trail of deadly slime wherever it slithers?

Be careful with the rules of their movement and limit the area in which they can wander. After all your adventurer won't be impressed if he is eaten by the mutant terrapin only moments into the game. It is also essential to warn the adventurer of the appearance and disappearance of these people, be they friend or foe.

When you have completed your work of art, why not send it to us for publication in Commodore games.

Happy adventuring!

DUCKWORTH HOME COMPUTING

CBM-64 PROGRAMS 1

edited by Nick Hampshire

This book provides the reader with useful and interesting programs for the 64. Topics covered include: Hi Res Graphics – Music – Games – Utilities – Sprites and User Defined Characters – Functional Programs, etc. There is a detailed explanation of Hi Res Graphics and the necessary machine code routines to implement them, along with demonstration programs. An exciting version of Star Trek is included as well as a full length adventure game. Among the functional programs is a Personal Information Retrieval package which enables you to create and manipulate up to 365 records.

Nick Hampshire is the publisher of *Commodore Computing International.*

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by Peter Gerrard

A comprehensive guide to using the extraordinary features of the Commodore 64, together with a full working explanation of the chips that make it possible: the 6581 Sound Interface Device and the 6566 Video Interface Chip, together with the processor that makes it all tick, the 6510.

Sections on programming your own musical instruments, producing sprite and programmable character animation, make this *the* guide for users of the Commodore 64 who want to get the most from the special features of their computer.

Peter Gerrard, former editor of *Commodore Computing International,* is a regular contributor to *Personal Computer News, Which Micro? and Software Review,* and *Commodore Horizons.*

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EXPLORING ADVENTURES ON THE COMMODORE 64

by Peter Gerrard

A complete look at the fabulous world of Adventure Games for your computer. Starting with an introduction to adventures, and their early history, it takes you gently through the basic programming necessary before you can start writing your own games.

Inputting information, room mapping, movement, vocabulary, and everything required to write an adventure game are explored in detail. There follow a number of scenarios, just to get you started, and finally three complete listings written especially for the 64, which will send you off into wonderful worlds where almost anything can happen. The three games listed in the book are available on one cassette at £7.95. The complete guide to adventure games: playing, writing and solving them. Peter Gerrard is the author of Romik's two top-selling adventure games — Fools Gold and Tomb of Xeiops.

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EXPLORING ADVENTURES ON THE VIC

by Peter Gerrard

As above but for the VIC. Two of the games require 16K expansion and the third 32K. A cassette containing all three games is also available at £7.95

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THE COMPLETE 64 ROM DISASSEMBLY

by Peter Gerrard and Kevin Bergin

This book is for anyone who has ever wondered how the Commodore 64 really works. Intended for the serious programmer, it includes fundamental memory maps, memory architecture maps, the disassembly itself and (for reference) the complete 6510 machine code instruction set.

Kevin Bergin is a regular contributor to *Personal Computer News, Commodore Horizons, Which Micro* and *Popular Computing Weekly.*

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THE COMPLETE VIC ROM DISASSEMBLY

by Peter Gerrard and Kevin Bergin

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A POCKET HANDBOOK FOR THE COMMODORE 64

by Peter Gerrard and Danny Doyle

This book contains all the vital information you will need when using your 64. There are sections on: ASCII tables – Basic keywords – Basic error messages – Colour memory – Conversion tables – Disk commands – Disk error mesages – Disk formats – Extramon listing – Flow charting – Hex/Dec convertor – Hyperbolic functions – Memory maps – Memory architecture – M/C instruction set – M/C mnemonics – Powers tables – Cartridge standards – Other output – Screen memory – Sound chip registers – Musical notes values – Sprite memory diagram. In short, everything you need to know about your machine.

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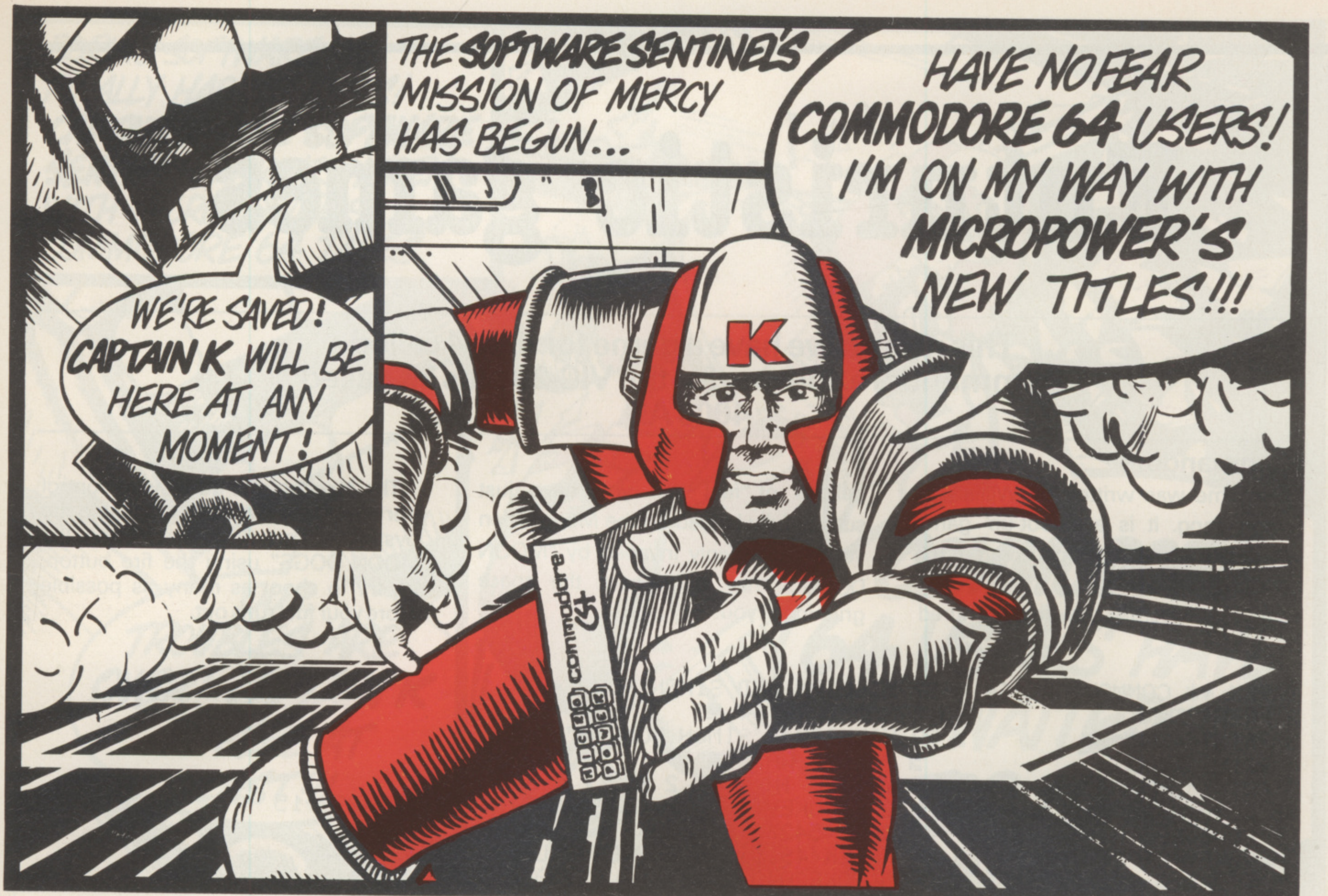
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Futuristic games

This month we have a game for the 64 called Commandore and one for the VIC-20 plus 3K called 4000 AD.

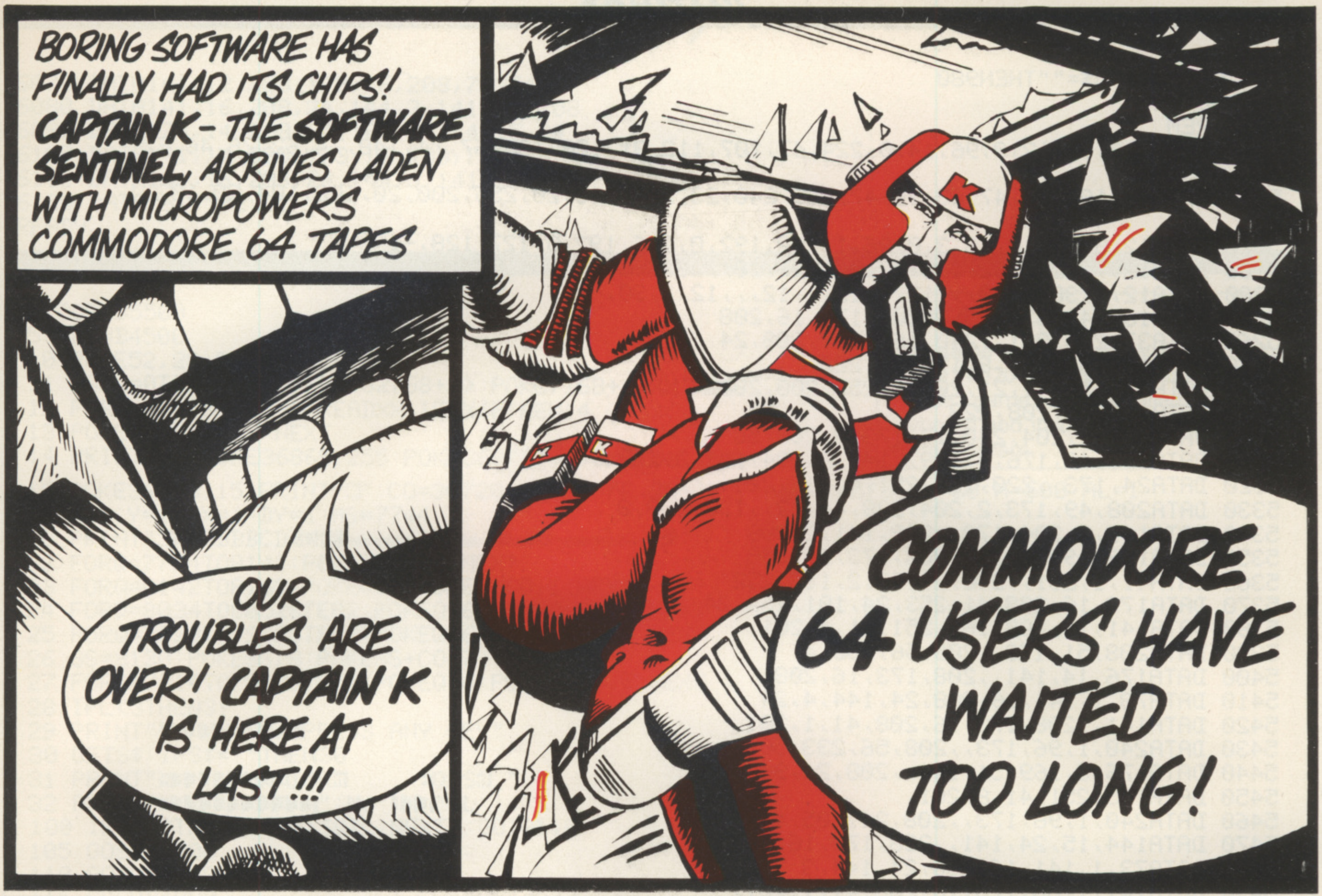
Commandore

This game was written by William & Simon Fong. It is a shoot-up' game where you control the spacecraft at the bottom of the screen.

Your spacecraft has five hundred gallons of fuel and you have just successfully landed on the Moon when you are suddenly invaded by "MOON DOGS". They drift about the space grinning at you.

The object of the game is to control your spacecraft left and right (using the Joystick in Port 2) and shooting the "MOON DOGS" using the fire button. You try to shoot as many as possible before your fuel runs out.

```
1 REM ** COMMANDORE 64 **BY WILLIAM AND SIMON FONG **
2 PRINT"]≡Q                ▣ COMMANDORE 64 ■"
3 PRINT"QQQQQQQ          ▣ BY WILLIAM & SIMON FONG ■"
4 PRINT"QQQQ                ▣ PLEASE WAIT ■"
5 PRINT"QQQQQm            ▣ JOYSTICK IN PORT 2 ■"
10 LL=0:HS=0:V=53248:POKEV+32,0:POKEV+33,0:R=50432:W=51968:POKE54296,15
15 VO=54296:HI=54273:LO=54272:WA=54276:AT=54277
20 POKEV+21,255:POKEV+23,1:IFPEEK(49152)<>169THENGOSUB100
30 S=0:Q=0:SYS49675:FORN=2TO5:POKE2040+N,253:POKEV+39+N,8:X=(N-2)*128:POKEV+N*2,
XAND255
60 IFINT(X/256)=1THENQ=Q+2↑N
70 POKEV+1+N*2,100:POKE52224+N*2,1:NEXT:POKEV+29,252:GOTO300
99 REM
100 FORN=0TO2:FORM=0TO63:READA:IFA=-1THEN150
130 POKE16192+N*64+M,A:NEXTM
150 FORP=MTO63:POKE16192+N*64+P,0:NEXTP,N
180 FORN=0TO5:FORM=0TO255:READA:IFA=-1THEN230
210 POKE49152+N*256+M,A:NEXTM
230 NEXTN:RETURN
300 FORN=6TO7:POKE2040+N,253:POKEV+39+N,8:X=(N-6)*256:POKEV+N*2,XAND255
330 IFINT(X/256)=1THENQ=Q+2↑N
340 POKEV+1+N*2,60:POKE52224+N*2,2:NEXT:POKEV+16,Q:SYS49664
370 SS=54272:POKESS+18,0:POKESS+14,255:POKESS+15,255:POKESS+18,129
390 POKE56325,30:POKE2041,255:POKE2040,254:POKEV,255:POKEV+1,238:POKEV+39,5:POKE
V+40,4
430 S=0:F=0:L=53278:PRINT"]≡":P=PEEK(L)
470 POKEV+23,1:POKEV+29,1:POKEV+23,3:POKEV+23,5:POKE56325,30
480 PRINT"≡":FORN=1TO80:G=INT(RND(1)*900)+1024:POKEG,46:NEXT:POKEG,81
485 PRINT"S/QQQQQQQQQQQQQQQQQQQQQQQQQQ________________________________________≡"
487 PRINT"S≡▣ COMMANDORE 64:BY WILLIAM & SIMON FONG ■"
500 SYSR:PRINT"SQ▣ FUEL USED:"F"▌ SCORE:"S" H.SC:"HS"▌ "
510 IFF>=500THEN900
520 F=F+1:P=PEEK(L):IFP=0THEN500
550 IFPAND2=0THEN500
610 SYS49920:A=PEEK(W+2):B=PEEK(W+3):C=PEEK(W+16)AND2:IFC=2THENC=256
620 FORX=2TO7:Y=PAND(2↑X):IFY=0THEN800
640 D=PEEK(W+16)AND(2↑X):IFD<>0THEND=256
650 T=-PEEK(W+2*X)+A-D+C:IFT<-8ORT>40THEN800
670 T=B-PEEK(W+2*X+1):IFT<-8ORT>40THEN800
690 POKE52226,0:POKEV+3,0:S=S+15:POKEV+21,PEEK(V+21)AND(255-2↑X)
691 POKEVO,15:POKEWA,129:POKEAT,190:POKEHI,40:POKELO,200
700 IFHS<STHENHS=S
710 GOTO500
800 NEXT:GOTO500
900 PRINT"QQQQQQQQQQ":PRINT"▶▶▶▶▶▶▶▶▶▶▶▶▶▶▶▶▣ GAME OVER ":POKE52226,0:POKEV+3,0
```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Dear subscribers,
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However, we can now assure our readers that this situation is being rectified. Commodore Computing International is now under the ownership of Croftward Limited who are cracking the proverbial whip to ensure a speedy and reliable subscription service.

Special offer
To compensate for the shortcomings of the service to date we are offering current subscribers 13 issues of CCI for the price of 12 (that's £15) when current subscriptions expire.

We are also extending this offer to new subscribers joining the service before September 15 1984.

So avoid the frustration of trekking to your local newsagent only to find that CCI is sold out by filling in the subscription form today. (You'll find it on page 49 of this issue.) Please mark the envelope clearly 'Subscription Special Offer'.

```
980 GETA$:IFA$=""THEN980
990 GOTO20
4999 REM
5000 DATA8,0,32,12,0,96,14,0,224,47,107,112,91,106,184,67,74,148,74,62,28,46,62,
16
5010 DATA46,190,80,47,63,16,47,255,240,23,234,240,20,255,200,20,102,104,20,102,1
04
5020 DATA12,0,8,6,0,16,3,0,96,1,182,192,0,246,192,0,127,128,-1
5100 DATA12,,,12,,,82,128,,210,192,,18,,,63,-1
5200 DATA12,,,30,,,30,,,12,,,12,,,12,,,12,,,30,-1
5250 DATA169,4,133,255,160,4,173,16,208
5260 DATA37,255,201,,240,16,185,,208,24
5270 DATA105,80,144,8,173,21,208
5280 DATA5,255,141,21,208,6,255,200,200
5290 DATA192,16,208,223
5300 DATA173,2,204,240,17,173,3,208,56
5310 DATA233,40,176,8,169,,141,2,204,141,3,208
5320 DATA24,173,,220,133,251,41,16,201,
5330 DATA208,49,173,2,204,208,44,32,,196,169,8
5340 DATA141,2,204,173,,208,141,2,208
5350 DATA169,190,141,3,208,173,16,208
5360 DATA41,1,201,,240,2,169,2,133,252
5370 DATA173,16,208,41,253,24,101,252,24
5380 DATA141,16,208,165,251,41,4,201,
5390 DATA208,51,173,,208,56,233,4
5400 DATA176,14,141,,208,173,16,208
5410 DATA73,1,141,16,208,24,144,4,24
5420 DATA141,,208,173,16,208,41,1,201,
5430 DATA240,1,96,173,,208,56,233,50
5440 DATA176,5,169,51,141,,208,24,96
5450 DATA165,251,41,8,201,
5460 DATA240,1,96,173,,208,24,105,4
5470 DATA144,15,24,141,,208,173,16,208
5480 DATA73,1,141,16,208,24,144,3
5490 DATA141,,208,173,16,208,41,1,201,
5500 DATA208,1,96,173,,208,56,233,51
5510 DATA144,6,24,169,50,141,,208,96,-1
5515 REM
5520 DATA238,,205,173,,205,205,1,205
5530 DATA208,5,169,,141,,205,169,4
5540 DATA133,255,160,4,185,,204,240,64
5550 DATA201,1,208,29,185,,208,56,233,2
5560 DATA176,14,153,,208,173,16,208
5570 DATA69,255,141,16,208,24,144,38
5575 DATA24,153,,208,24,144,31
5580 DATA201,2,208,27,185,,208,24,105,2
5590 DATA144,15,24,153,,208,173,16,208
5600 DATA69,255,141,16,208,24,144,3
5610 DATA153,,208,24,6,255,200,200
5620 DATA192,16,208,179,173,2,204
5630 DATA240,10,173,3,208,56,233,3,24
5640 DATA141,3,208,76,49,234,-1
5700 DATA169,193,141,21,3,169,,141,20,3
5710 DATA96
5720 DATA169,234,141,21,3,169,49,141,20,3
5730 DATA96,-1
5800 DATA160,,185,,208,153,,203,200
5810 DATA192,17,208,245,96,-1
5900 DATA169,,141,4,212,169,10
5910 DATA141,5,212,169,1,141,6,212
5920 DATA169,129,141,4,212,169,50
5930 DATA141,1,212,96,-1
6000 DATA160,4,132,255,173,16,208,37,255
6010 DATA201,,240,21,185,,208,24,105,10
6020 DATA144,13,24,173,27,212,41,31,24
6030 DATA105,132,24,153,1,208,6,255,200
6040 DATA200,192,12,208,218
6050 DATA173,27,212,41,4,133,253
6060 DATA173,12,208,24,105,3,144,15,24
```

```
6070 DATA141,12,208,173,16,208,73,64
6080 DATA141,16,208,24,144,3,141,12,208
6090 DATA173,14,208,24,105,3,144,15,24
6100 DATA141,14,208,173,16,208,73,128
6110 DATA141,16,208,24,144,3,141,14,208
6120 DATA76,,192,-1
READY.
```

4000 AD

This game was written by Richard Ikin for the VIC-20 with 3K expansion.

The game is controlled by the keyboard and instructions are included in the program.

```
1 GOSUB5500
5 GOSUB4500
10 POKE52,28:POKE56,28:CLR
11 FORJ=0TO511:XX=PEEK(32768+J):POKE7168+J,XX:NEXT
12 FORJ=0TO(64*8)-1:READXX:IFXX<0THEN14
13 POKE7168+J,XX:NEXT
14 PRINT"■":POKE36869,255:POKE36879,8:POKE650,255:L=3
15 POKE36878,15:PRINT"■":CO=30720:S1=36876:S2=36877:S3=36875:TL=60:M=500:AL=1
16 X=1:Y=1:DX=1:DY=1:MS=7744
20 PRINT"■■◣ABBBCD■■■▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒■";
22 FORQ=7724TO8141:POKEQ+CO,4:NEXT
23 FORQ=8142TO8163:POKEQ,7:POKEQ+CO,1:NEXT
24 FORQ=8034TO8052STEP2:POKEQ,6:POKEQ+CO,7:NEXT
25 FORQ=7923TO7942STEP2:POKEQ,6:POKEQ+CO,7:NEXT
26 SS=8130:POKESS,8:POKESS+CO,7
27 FORQ=7814TO7832STEP2:POKEQ,6:POKEQ+CO,7:NEXT
28 IFL<3THEN31
29 PRINT"■■■■■■■■■■■PRESS ANY KEY"
30 GETS$:IFS$=""THEN30
31 PRINT"■■■■■■■■■■IJK■      ■QRS■ "
32 PRINT"■■■■■■■■■■■■";M;"■■■";L
100 IFAL=0THENFORT=1TOTL:NEXTT:GOTO110
105 GOSUB1000
110 GOSUB1500
115 GOSUB4000
120 GETA$
121 IFA$=";"THENGOSUB3500
122 IFA$="L"THENGOSUB3000
123 IFA$="A"THENGOSUB2500
199 GOTO100
1000 POKES1,0
1010 POKE7734+X+22*Y,5
1020 FORT=1TOTL:NEXTT
1030 POKE7734+X+22*Y,32
1040 X=X+DX
1050 IFX=-10ORX=11THENDX=-DX:POKES1,220
1060 Y=Y+DY
1070 IFY=1ORY=>18THENDY=-DY:POKES1,230
1085 IFPEEK(7734+X+22*Y)=6THENGOSUB1600:POKES1,183
1086 M=M-1:IFM<=0THENM=0:GOSUB1500:GOTO2000
1090 RETURN
1500 PRINT"■■■■■■■■■■■■■      ■■■■■";M
1510 PRINT"■■■■■■■■■■■■■■■■■■■■■■■";L-1
1520 RETURN
1600 CH=INT(1+4*RND(0))
1610 ONCHGOTO1620,1630,1640,1650
1620 DX=-DX:DY=DY:RETURN
1630 DX=DX:DY=-DY:RETURN
1640 DX=DX:DY=DY:RETURN
1650 DX=-DX:DY=-DY:RETURN
2000 POKES1,0
2030 FORE=SSTO8120STEP-1:POKEE,8:POKEE+CO,7:POKEE+1,32:POKES2,240:NEXT:SS=8120
2040 POKE8142,7:POKE8142+CO,1
2060 POKES2,0
2070 FORV=15TO0STEP-1:POKE36878,V:FORS=255TO128STEP-5.5:POKES1,S:NEXTS,V:POKES1,
0
2080 FOREX=1TO20
2090 POKESS,12:POKESS+CO,2:FORT=1TO100:NEXTT:POKESS,13:POKESS+CO,2
2095 FORT=1TO100:NEXTT
```

```
2096 GOSUB4000
2100 NEXTEX
2110 L=L-1:IFL=0THENL=1:M=0:GOSUB1500:GOTO5000
2120 GOTO15
2500 POKES1,0:FORF=SS-22TOSS-384STEP-22
2505 IFAL=1THENPOKE7734+X+22*Y,5
2510 POKEF,20:POKEF+CO,4:POKEF+22,32:POKESS,8:POKESS+CO,7
2520 IFPEEK(F-22)=5THEN2600
2530 IFPEEK(F-22)=6THEN2700
2535 IFPEEK(F-22)=14ORPEEK(F-22)=15THEN2800
2540 POKEF,32:NEXT
2550 POKEF,32:POKE7734+X+22*Y,32:RETURN
2600 IFPEEK(F-22)=5THENAL=0:POKE7712+X+22*Y,32
2610 FORV=15TO0STEP-5
2620 POKE36878,V
2630 FORS=255TO180STEP-2
2640 POKES3,S
2650 NEXTS,V
2660 GOTO2550
2700 IFPEEK(F-22)=6THENM=M-100:IFM<0THENM=0:GOSUB1500
2710 GOTO2550
2800 IFAL=1THEN2550
2810 IFPEEK(F-22)=14ORPEEK(F-22)=15THENPOKEMS,32:POKEMS+1,32:POKE36878,0:POKES1,
0
2820 POKES2,0:POKES3,0:POKEF,32:GOTO5000
3000 IFSS=8120THENPOKE8120,32:SS=8141:GOTO3050
3010 SS=SS-1:POKESS+1,32
3050 POKESS,8:POKESS+CO,7
3499 RETURN
3500 IFSS=8141THENPOKE8141,32:SS=8120:GOTO3550
3510 SS=SS+1:POKESS-1,32
3550 POKESS,8:POKESS+CO,7
3999 RETURN
4000 IFMS=7724THENPOKE7724,32:POKE7725,32:MS=7744:GOTO4040
4010 MS=MS-1:POKEMS+2,32
4040 MC=INT(1+7*RND(0)):IFMC=1THENMC=2
4050 POKEMS,14:POKEMS+CO,MC:POKEMS+1,15:POKEMS+1+CO,MC
4060 IFAL=0THENM=M-1:IFM=0THEN2000
4499 RETURN
4500 POKE36869,240:POKE36879,8:PRINT"▒"
4520 PRINT"▒▒▒▒▒▒▒                    ■";
4530 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒                    ■";
4540 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒/1 ▒▒▒▒L/ |▒▒▒▒▒L/  |▒▒▒▒▒▒‾‾Tooo AD"
4550 PRINT"▒▒▒▒▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔";
4560 PRINT"▒INITIALISING GRAPHICS"
4570 PRINT"▒▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁";
4580 PRINT"▒▒▒▒(C) RICHARD IKIN 1984"
4999 RETURN
5000 POKES1,0:FORV=15TO0STEP-1:POKE36878,V:FORS=255TO128STEP-5.5:POKES1,S:NEXTS,
V
5004 FORQ=7724TO8119:POKEQ,32:NEXT
5005 POKES1,0:POKES2,0:POKES3,0:POKE36878,0
5010 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒/1 ▒▒▒▒L/ |▒▒▒▒▒L/  |▒▒▒▒▒▒‾‾T000 AD"
5020 IFL>0ANDAL=0THENPRINT"▒▒▒▒▒▒▒▒CONGRATULATIONS":GOTO5030
5025 PRINT"▒▒▒▒▒▒▒▒BAD LUCK!!!!"
5030 PRINT"▒▒▒▒▒DO YOU WANT ANOTHER   ▒GAME?(Y/N)"
5040 GETA$
5045 IFA$="Y"THENFORQ=7834TO8141:POKEQ,32:NEXT:GOTO5050
5046 IFA$="N"THENFORQ=7834TO8141:POKEQ,32:NEXT:GOTO5050
5047 GOTO5040
5050 PRINT"▒▒▒▒▒PRESS [F1] TO PLAY"
5060 PRINT"▒▒PRESS [F3] TO LEAVE"
5070 GETA$
5075 IFA$="■"THENRUN
5080 IFA$="■"THENSYS64802
5090 GOTO5070
5500 PRINTCHR$(147):POKE36879,25:POKE36869,240
5505 PRINT"▒▒▒▒▒▒▒INSTRUCTIONS■"
5510 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒/1 ▒▒▒▒L/ |▒▒▒▒▒L/  |▒▒▒▒▒▒‾‾T000 AD"
```

```
5520 PRINT"▒KEYS:-▒,▀-RIGHT▒▒▒▒▒▒▒▒▒L▀-LEFT▒▒▒▒▒▒▒▒▒A▀-FIRE"
5530 PRINT"▒▒▒▒SHOOT THE ALIEN   BEFORE THE TIME RUNS  OUT.YOU HAVE THREE LI-";
5540 PRINT"VES.IF YOU SHOOT THE  ALIEN YOU MUST THEN   SHOOT THE MOTHERSHIP. ";
5550 PRINT"HOWEVER,THE TIME IS   RAPIDLY COUNTING DOWN.▒PRESS ▒F1▀-FOR NEXT PAGE
"
5560 GETA$:IFA$="■"THEN5570
5565 GOTO5560
5570 PRINT"□"
5580 PRINT"▒▒▒▒▒▒▒▒▒/1 ▒▒▒L/ |▒▒▒▒L/  |▒▒▒▒▒┌──T000 AD"
5590 PRINT"▒▒▒▒▒IF YOU SHOOT A BOXTHEN THE TIME COUNTS  DOWN 100 PTS AND YOU  "
;
5600 PRINT"GET CLOSER TO LOSING ALIFE.SO,REMEMBER,DON'TSHOOT THE BOXES."
5610 PRINT"▒▒▒▒▒PRESS ▒F1▀-TO RE-READ"
5620 PRINT"▒PRESS ▒F5▀-TO PLAY"
5630 GETA$
5640 IFA$="■"THEN5500
5650 IFA$="▌"THENRETURN
5660 GOTO5630
10000 REM**DATA**
10010 DATA28,28,28,28,255,255,255,28
10011 DATA12,28,60,108,255,255,12,12
10012 DATA60,126,206,214,230,198,254,124
10013 DATA60,126,198,198,254,254,198,198
10014 DATA120,252,198,198,198,198,252,248
10018 DATA129,66,60,90,255,195,60,66
10019 DATA0,124,2,246,246,246,246,244
10020 DATA0,0,0,0,170,85,170,85
10021 DATA24,60,126,126,24,60,126,231
10022 DATA7,2,2,2,2,0,0,0,118,37,37,37,117,0,0,0,220,81,92,81,92,0,0,0
10023 DATA0,65,8,36,75,146,108,255,136,2,96,132,41,84,209,255
10024 DATA0,3,15,21,255,31,3,0,0,192,240,168,255,248,192,0
10025 DATA24,24,24,24,60,126,102,66
10026 DATA4,4,4,4,7,0,0,0,117,37,37,37,114,0,0,0,119,68,119,65,119,0,0,0
10027 DATA8,8,8,8,0,0,0,0,-1
READY.
```

OTHELLO

In this game for the unexpanded VIC there is an 8 x 8 board and the object is to gain as many pieces as possible. You are white and the computer is black.

To gain a piece, you must place one of your pieces in such a way that one of the computer's pieces is in between the piece you placed and another of your pieces. You must 'outflank' at least one piece to be able to make a move. If you can not make a move, enter "K" and then enter the position for a non-outflanking piece. This piece will be put on the board but will not flip any other pieces.

When the board is full, enter "F" and return to end game. The position is entered by the latter first and then the number.

```
5 DIMF%(20),G%(20)
10 FORA=1TO8:READA%(A):NEXT:FORA=1TO4:READD%(A):NEXT:FORA=1TO4:READW%(A):NEXT
20 DATA2,-44,44,-2,42,-42,46,-46,7725,8033,7739,8047,7771,7991,7781,8001
30 HH=229:BB=231:HF=1:BF=6:HL=2:BL=2:POKE36879,89
50 PRINT"□▒▒     OTHELLO      ▒▒▒ ";:PRINT"▀┌┬┬┬┬┬┬┬┬┬┬┬┬┬┬┐▒▒ ▒▒▒ ";
60 FORA=1TO7:PRINT"▀| | | | | | | | |▒▒";:A$=STR$(A):PRINTRIGHT$(A$,1)"▒▒▒ ";
70 PRINT"▀├┼┼┼┼┼┼┼┼┼┼┼┼┼┼┤▒▒ ▒▒▒ ";:NEXT:PRINT"▀| | | | | | | | |▒▒▒▒▒ ";
80 PRINT"▀└┴┴┴┴┴┴┴┴┴┴┴┴┴┴┘▒ ▒▒▒ ";:PRINT"▒ A B C D E F G H      "
90 GOSUB1400:A=7863:A1=30720:POKEA,HH:POKEA+A1,1:POKEA+2,BB:POKEA+A1+2,6
95 POKEA+44,BB:POKEA+A1+44,6:POKEA+46,HH:POKEA+A1+46,1
100 HH=229:BB=231:HF=1:CC%=0
105 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒":IFC=1THEN200
110 PRINT"     ":INPUT"□";A$:IFA$="K"THENCC%=1:GOTO105
120 M=ASC(LEFT$(A$,1)):N=VAL(RIGHT$(A$,1)):C1=7681+((M-65)*2)+(N*44):C=C1
121 IFCC%=1THENPOKEC,229:POKEC+30720,1:HL=HL+1:GOTO200
122 KO=0:IFM=65ORM=72THEND1=44:KO=1
124 IFN=1ORN=8THEND1=2:KO=2
126 IFNOTPEEK(C)=96THEN100
130 IFPEEK(C)=96THENHL=HL+1:GOSUB150:IFJ=1THEN200
140 HL=HL-1:POKEC,96:GOTO100
150 J=0:POKEC,81
151 GETQ$:IFQ$=""THEN151
152 IFQ$="F"ANDHH=229THENRETURN
154 J=0:FORA=1TO8:B=0:U%=0
155 B=B+A%(A):IFPEEK(C+B)=BBTHENU%=1:GOTO155
160 IFNOTPEEK(C+B)=HHORU%=0THEN175
```

```
165 B=0:POKEC,HH:POKEC+30720,HF:J=1
170 B=B+A%(A):IFPEEK(C+B)=BBTHENGOSUB180:GOTO170
175 NEXT:RETURN
180 POKEC+B,HH:POKEC+B+30720,HF:IFHH=229THENHL=HL+1:BL=BL-1
185 IFHH=231THENHL=HL-1:BL=BL+1
190 PRINT"SQQQQ"TAB(18)"    ███"HL:PRINTTAB(40)"    ███"BL:RETURN
200 BL=BL+1:HH=231:BB=229:HF=6:G=0:IFBL+HL<12THEN450
205 FORD=1TO4:C=D%(D):IFPEEK(C)=96THENGOSUB999:IFNOTY=0THEN1300
220 NEXT:H%=0:C=C1:IFKO=0THEN300
230 C=C+D1:IFPEEK(C)=BBTHEN230
240 IFPEEK(C)=HHTHENH%=H%+1:GOSUB290:GOTO260
250 IFPEEK(C)=96THENC2=C:GOSUB290:GOTO270
255 GOTO300
260 IFPEEK(C)=BBTHEN300
270 D1=-D1:IFD1<0THENC=C1:GOTO230
280 IFNOTH%=1THEN300
282 C=C2:GOTO1300
290 C=C+D1:IFPEEK(C)=HHTHEN290
295 RETURN
300 FORD=1TO4:C=D%(D):H1=0:H%=0:FORE=1TO6:C=C+A%(D):IFNOTPEEK(C)=96THEN420
320 GOSUB999:IFY=0THEN420
330 C3=C:F%(G)=C:G%(G)=-Y:G=G+1:H%=0:H4%=0:H5%=0
340 C3=C3+A%(D):IFPEEK(C3)=BBTHENH%=1:H5%=1:GOTO340
350 IFPEEK(C3)=HHTHENH%=0:H5%=0:GOTO340
355 IFPEEK(C3)>127THENH5%=H5%+2
360 IFPEEK(C+2*A%(D))=HHTHENIFPEEK(C+A%(D))=96THEN420
362 A=A%(D):FORA1=1TO2
364 IFPEEK(A+C)=96ANDPEEK(C+A*2)=96ANDPEEK(C+A*3)=96ANDPEEK(C+A*4)=HHTHEN420
370 A=-A:NEXT:C3=C:H3%=0:H1=0
380 C3=C3-A%(D):IFPEEK(C3)=BBTHENH3%=1:H4%=1:GOTO380
390 IFPEEK(C3)=HHTHENH3%=0:H4%=0:GOTO380
400 IFPEEK(C3)=BBORH3%=1THENH1=1
405 H1=H1+H%:IFPEEK(C3)>127THENH4%=H4%+2
407 IFPEEK(C-2*A%(D))=HHTHENIFPEEK(C-A%(D))=96THEN420
410 IFNOTH1=1THEN1300
415 IFH5%=H4%THEN1300
417 IFH5%=2ORH4%=2THEN1300
420 NEXT:NEXT:GOTO450
450 A2=7817:A3=7823:A4=2:A5=132:GOSUB460:A2=7861:A3=7905:A4=44:A5=6:GOSUB460
455 IFHL+BL<17ANDG>0THEN1200
457 GOTO500
460 FORA1=A2TOA3STEPA4:C=A1
465 IFPEEK(C)=96THENGOSUB999:IFNOTY=0THENF%(G)=C:G%(G)=Y:G=G+1
470 C=A1+A5:IFPEEK(C)=96THENGOSUB999:IFNOTY=0THENF%(G)=C:G%(G)=Y:G=G+1
480 NEXT:RETURN
500 A2=7771:A3=7781:A4=2:A5=220:GOSUB460:A2=7815:A3=7947:A4=44:A5=10:GOSUB460
510 GOTO1200
999 Y=0:FORA=1TO8:B=0
1010 B=B+A%(A):IFPEEK(C+B)=BBTHENU=U+1:GOTO1010
1020 IFPEEK(C+B)=HHTHENY=Y+U
1030 B=0:U=0:NEXT:RETURN
1200 IFG=0THEN1305
1205 FORW=0TOG-1
1210 FORW1=1TO4:IFF%(W)=W%(W1)THENIFPEEK(D%(W1))=96THENG%(W)=-G%(W)
1220 NEXT:NEXT
1230 I=0:X=0:FORW=0TOG-1:IFG%(W)=XTHENI%(I)=F%(W):I=I+1
1235 IFG%(W)>XTHENI=0:X=G%(W):I%(0)=F%(W):I=1
1240 NEXT
1250 IFNOTX=0THEN1290
1260 IFG=0THEN100
1270 C=INT(RND(1)*G):C=F%(C):GOSUB150:GOTO100
1290 C=INT(RND(1)*I):C=I%(C)
1300 GOSUB150:IFNOTJ=0THEN100
1305 FORD=1TO4:IFPEEK(D%(D))=96THENC=D%(D):GOTO1350
1310 NEXT:FORQW=7725TO7739STEP2:FORQQ=0TO308STEP44
1320 IFPEEK(QQ+QW)=96THENC=QQ+QW:GOTO1350
1330 NEXT:NEXT:END
1350 POKEC,231:POKEC+30720,6:GOSUB154:GOTO100
1400 FORA=7725TO7739STEP2:FORQQ=0TO308STEP44:POKEA+QQ,96:NEXT:NEXT:RETURN
READY
```

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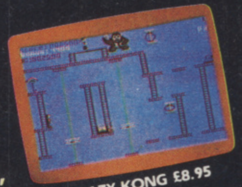

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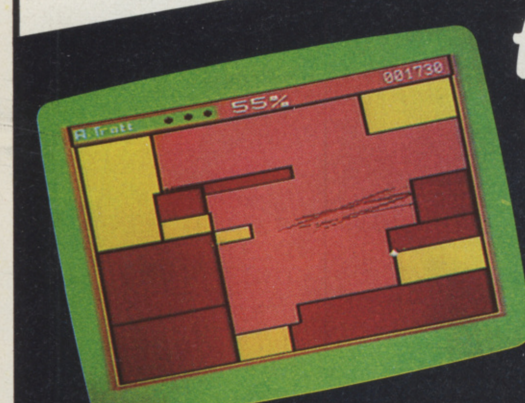

for games

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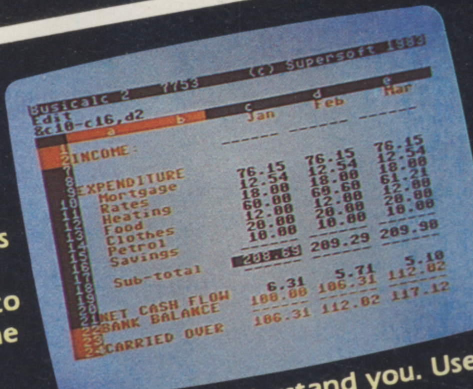

```
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 1
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 8EXPENDITURE
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11  Heating                 18.00      18.00      18.00
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13  Clothes                 12.00      12.00      12.00
14  Petrol                  20.00      20.00      20.00
15  Savings                 10.00      10.00      10.00
16                        -------    -------    -------
17   Sub-total             208.69     209.29     209.90
18                        -------    -------    -------
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20
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```

for business

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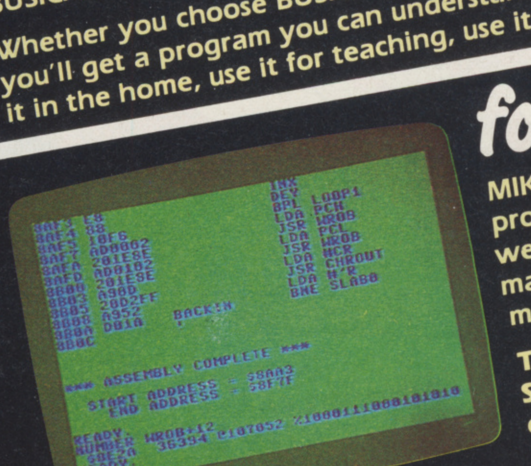

```
8AF3 E8                 INX
8AF4 88                 DEY
8AF5 10F6               BPL  LOOP1
8AF7 AD0002             LDA  PCH
8AFA 201E8E             JSR  WROB
8AFD AD0102             LDA  PCL
8B00 201E8E             JSR  WROB
8B03 A90D               LDA  #CR
8B05 20D2FF             JSR  CHROUT
8B08 A952     BACKIN    LDA  #'R
8B0A D01A               BNE  SLAB0
8B0C

*** ASSEMBLY COMPLETE ***

 START ADDRESS = $8AA3
   END ADDRESS = $8F7F

READY.
NUMBER WROB+12
  36394 @107052 %1000111000101010
  $8E2A
READY.
```

for programmers

MIKRO is a full 6502/6510 ASSEMBLER with the power that professional programmers need, yet so simple to use that we recommend it to beginners! The MIKRO cartridge has many other facilities including editing commands and a machine language monitor, all for £57.50.

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The Best 64 Software

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Roll the dice

This month we have two useful programs for the 64 and one for the unexpanded VIC-20.

This program could be used as a subroutine for a larger program or just used when playing board games. It simulates the rolling of two dice on the screen using Sprites that give a 3D effect. The dice are not weighted towards any number and just use the random number generator in the 64.

The program was written by CG and EJ Bull

```
1 REM    **************************
2 REM    *                        *
3 REM    *  ANIMATED DICE ROLLER  *
4 REM    *                        *
5 REM    **************************
6 REM
7 REM    C.G & E.J.BULL     FEB.1984
8 REM    ==========================
9 REM
10 PRINT"♥":POKE52,48:POKE56,48:CLR:V=53248:
   S=54272:D=12800
15 PRINT"QQ]]]]PLEASE WAIT - SETTING UP!"
19 REM SET SOUND
20 POKES,247:POKES+1,53:POKES+5,0:POKES+6,1
25 REM SET VIC CHIP
30 FORP=0TO15STEP4:POKEV+P,120:POKEV+P+1,125:POKEV+P+2,200:POKEV+P+3,125:NEXT
40 POKEV+16,0:POKEV+23,255:POKEV+29,255
45 REM SET COLOUR
50 FORC=39TO46:POKEV+C,1:NEXT
55 REM FILL DATA FOR SPRITES
60 READQ:IFQ=-99THEN80
70 POKED,Q:D=D+1:GOTO60
80 REM SET SPRITE POINTERS
90 FORP=0TO6STEP2:POKE2040+P,206+P/2:POKE2041+P,206+P/2:NEXT
95 PRINT"♥"
99 REM ROLL THE DICE
100 FORROLL=1TO5+INT(RND(1)*10):POKES+4,129:POKES+24,15
110 POKEV+21,2↑(INT(RND(1)*4)*2)OR2↑(INT(RND(1)*4)*2+1):POKES+4,0:NEXT
120 POKES+24,0:POKE2040,200+INT(RND(1)*6):POKE2041,200+INT(RND(1)*6):POKEV+21,3
125 FORL=1TO10:PRINT"Q":NEXT:PRINTTAB(7)"HIT ANY KEY TO ROLL AGAIN"
130 GETA$:IFA$=""THEN130
140 POKE2040,206:POKE2041,206:GOTO95
599 REM DATA FOR 10 SPRITES
600 DATA 0,0,0,0,0,0,0,0
601 DATA 0,15,255,240,15,255,240,15
602 DATA 255,240,15,255,240,15,255,240
603 DATA 15,255,240,15,255,240,15,231
604 DATA 240,15,231,240,15,255,240,15
605 DATA 255,240,15,255,240,15,255,240
606 DATA 15,255,240,15,255,240,15,255
607 DATA 240,0,0,0,0,0,0,0
608 DATA 0,0,0,0,0,0,0,0
609 DATA 0,15,255,240,15,255,240,15
610 DATA 255,48,15,255,48,15,255,240
611 DATA 15,255,240,15,255,240,15,255
612 DATA 240,15,255,240,15,255,240,15
613 DATA 255,240,15,255,240,12,255,240
614 DATA 12,255,240,15,255,240,15,255
```

```
615 DATA 240,0,0,0,0,0,0,0
616 DATA 0,0,0,0,0,0,0,0
617 DATA 0,15,255,240,15,255,240,15
618 DATA 255,48,15,255,48,15,255,240
619 DATA 15,255,240,15,255,240,15,231
620 DATA 240,15,231,240,15,255,240,15
621 DATA 255,240,15,255,240,12,255,240
622 DATA 12,255,240,15,255,240,15,255
623 DATA 240,0,0,0,0,0,0,0
624 DATA 0,0,0,0,0,0,0,0
625 DATA 0,15,255,240,15,255,240,12
626 DATA 255,48,12,255,48,15,255,240
627 DATA 15,255,240,15,255,240,15,255
628 DATA 240,15,255,240,15,255,240,15
629 DATA 255,240,15,255,240,12,255,48
630 DATA 12,255,48,15,255,240,15,255
631 DATA 240,0,0,0,0,0,0,0
632 DATA 0;0,0,0,0,0,0,0
633 DATA 0,15,255,240,15,255,240,12
634 DATA 255,48,12,255,48,15,255,240
635 DATA 15,255,240,15,255,240,15,231
636 DATA 240,15,231,240,15,255,240,15
637 DATA 255,240,15,255,240,12,255,48
638 DATA 12,255,48,15,255,240,15,255
639 DATA 240,0,0,0,0,0,0,0
640 DATA 0,0,0,0,0,0,0,0
641 DATA 0,15,255,240,15,255,240,12
642 DATA 255,48,12,255,48,15,255,240
643 DATA 15,255,240,15,255,240,12,255
644 DATA 48,12,255,48,15,255,240,15
645 DATA 255,240,15,255,240,12,255,48
646 DATA 12,255,48,15,255,240,15,255
647 DATA 240,0,0,0,0,0,0,0
648 DATA 0,32,0,0,112,0,0,248
649 DATA 0,1,156,0,3,158,0,7
650 DATA 255,0,15,255,128,31,255,192
651 DATA 63,255,224,127,159,240,255,159
652 DATA 240,255,255,224,127,255,192,63
653 DATA 255,128,31,255,0,15,254,0
654 DATA 7,156,0,3,152,0,1,240
655 DATA 0,0,224,0,0,64,0,255
656 DATA 31,255,248,25,231,152,31,255
657 DATA 248,31,255,248,25,231,152,31
658 DATA 255,248,0,0,0,31,255,248
659 DATA 31,255,248,31,255,152,31,255
660 DATA 152,31,255,248,31,255,248,31
661 DATA 255,248,31,255,248,31,255,248
662 DATA 31,255,248,25,255,248,25,255
663 DATA 248,31,255,248,31,255,248,0
664 DATA 0,0,0,0,0,0,0,127
665 DATA 0,1,191,128,3,223,192,6
666 DATA 110,96,14,118,112,31,251,248
667 DATA 63,253,252,79,254,254,207,243
668 DATA 0,127,242,254,63,253,228,31
669 DATA 251,232,14,119,240,6,111,224
670 DATA 3,215,192,1,167,128,0,127
671 DATA 0,0,0,0,0,0,0,0
672 DATA 0,1,0,0,7,128,0,28
673 DATA 192,0,124,192,1,255,224,7
674 DATA 255,224,25,255,240,25,255,240
675 DATA 15,243,248,15,243,200,7,255
676 DATA 204,7,255,252,3,255,242,3
677 DATA 255,206,1,159,63,1,156,252
678 DATA 0,243,240,0,207,192,0,63
679 DATA 0,0,124,0,0,48,0,0
680 DATA -99
READY.
```

Graphic Editor

Yet another character editor for the unexpanded VIC-20. This program was written by CR Craig and, to fit it inside the unexpanded VIC, the instructions come separately.

Key use

U	Move the cursor UP.
N	Move the cursor DOWN.
H	Move the cursor LEFT.
J	Move the cursor RIGHT.
shJ	Scroll the display characters one position to the left (will not scroll past character 0).
shH	Scroll the display characters one position to the right (will not scroll past character 59).
F1	Invert part or all of character being edited.
F3	Mirror part or all of character being edited.
F5	Display number of characters together. You will be asked the dimensions of the display area followed by each character number going from left to right on each line.
F7	Copy the character being edited to another character.
G	Choose another character to edit.
shE	LOAD or SAVE characters will LOAD or SAVE the definitions of the 20 characters being displayed at the top of the screen.
CLR	Clear part or all of the character being edited.
shCLR	Re-start program resetting commodore characters.
SPACE	If the screen should become untidy due to REDO FROM START error message etc. this will Re-set the screen.
A	Plot a point at the cursor on the character being edited.
D	Delete a point.

Note: sh stands for the SHIFT key + key.

```
1 REM ***************
2 REM *     BY      *
3 REM * G.R.CRAIG   *
4 REM ***************
5 CLR:POKE51,0:POKE52,28:POKE55,0:POKE56,28:POKE650,255
6 C=36879:U=C-10:S=7817:CS=38537:H=0:D=0:RO=32768:DI=0:V1=C-4:POKEV1+3,15:J=7168
7 FORZ1=0TO10:ON(Z1)GOSUB50,90,58,95,90,55,90,60,96,66:NEXT:H=0:D=0:GOTO16
9 GETC$:IFC$=""THEN9
10 IFC$="⊐"THENPOKEC,27:GOSUB120:GOTO1
11 GOSUB90:OL=O1:OC=O2:POKEV1,200:GOSUB30:IFC$<>"U"ANDC$<>"N"ANDC$<>"J"ANDC$<>"H
"THEN17
12 POKEV1,230:IFC$="N"THENH=H+1+(H>6)
13 IFC$="U"THENH=H-1-(H<1)
14 IFC$="H"THEND=D-1-(D<1)
15 IFC$="J"THEND=D+1+(D>6)
16 GOSUB90:GOSUB31:OL=214:OC=3:GOSUB30:GOTO9
17 POKEV1,0:IFC$="A"THENOL=209:OC=0:GOSUB30:GOSUB64:GOSUB66:GOTO16
18 IFC$="D"THENOL=215:OC=2:GOSUB30:GOSUB64:GOSUB66:GOTO16
19 IFC$=" ╲"THENDI=DI+1+(DI>39):GOSUB96:GETC$:GOTO19
20 IFC$=" |"THENDI=DI-1-(DI<1):GOSUB96:GETC$:GOTO20
21 IFC$="G"THENGOSUB55:C$=" "
22 IFC$="▩"THENGOSUB82
23 IFC$="■"THENGOSUB82
24 IFC$="▤"THENGOSUB70
25 IFC$="|▮"THENGOSUB40
26 IFC$="◤"THENGOSUB100
27 IFC$="▮|"THENGOSUB110
28 GOSUB66:H=0:D=0:IFC$<>" "THEN GOTO16
29 GOSUB50:GOSUB60:GOSUB96:GOSUB66:GOTO16
30 POKES+D+(22*H),OL:POKECS+D+(22*H),OC:POKEV1,0:RETURN
31 O1=PEEK(S+D+(22*H)):O2=PEEK(CS+D+(22*H)):RETURN
40 INPUT"▩■  HEIGHT▧ (1-6)";Z:GOSUB90:INPUT"▩■  WIDTH▧ (1-4)";X
41 IFZ>6ORZ<1ORX>4ORX<1THENGOSUB120:GOTO40
42 S=S-6:CS=CS-6:FORL8=1TOZ:FORL9=1TOX
43 GOSUB90:INPUT"■▩  CHAR (0-59):";OL:IFOL<0OROL>59THENGOSUB120:GOTO43
44 OC=0:H=L8:D=L9:GOSUB30:NEXT:NEXT:S=S+6:CS=CS+6:RETURN
50 PRINT"⊐▩▧╭────────────────╮|■▩@ABCDEFGHIJKLMNOPQRS▩▧|╰──────────
─╯":POKEC,25
51 PRINT"▩":POKEU,255:FORT=1TO8:PRINT"▶▶▶▶▩▧OOOOOOOO":NEXT
52 PRINT"▩▩▩▩▩▧╭──────────────────╮|◣*■VIC GRAPHIC EDITOR◣*▧|╰──────────
───╯":RETURN
55 INPUT"▩■  CHAR (0-59):▧";CH:IFCH<60ANDCH>-1THENRETURN
56 GOSUB120:GOTO55
58 INPUT"▩■  GROUP (0-15):▧";GR:IFGR<16ANDGR>-1THENRETURN
59 GOSUB120:GOTO58
```

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```
60 FORL1=0TO7:V=128:GC=PEEK(J+(CH*8)+L1):FORL2=0TO7:D=L2:H=L1:POKE(S-44)+L2,CH:O
L=215:OC=2
61 POKE(CS-44)+L2,L2:IFGC>=VTHENOL=209:OC=0:GC=GC-V
63 GOSUB30:V=V/2:NEXT:NEXT:RETURN
64 X=D:A=0:V=128:FORL9=0TO7:D=L9:GOSUB31:IFO1=209THENA=A+V
65 V=V/2:NEXT:POKEJ+(8*CH)+H,A:D=X:RETURN
66 PRINT"▣QQQQQ":FORT=1TO8:PRINTTAB(13);"▣◣=■       ■■■■■"PEEK(J-1+(8*CH)+T):NEXT:RET
URN
70 GOSUB80:Z=H:X=H:IFQ=1THENZ=0:X=7
71 FORL1=ZTOX:C$="":FORL2=7TO0STEP-1:D=L2:H=L1:GOSUB31:IFO1=215THENC$=C$+"0":GOT
O73
72 C$=C$+"1"
73 NEXT:FORL5=1TO8:D=L5-1:H=L1:OL=209:OC=0:IFMID$(C$,L5,1)="0"THENOL=215:OC=2
74 GOSUB30:NEXT:GOSUB64:NEXT:RETURN
80 INPUT"▣■  1=ALL 0=LINE▣";Q:IFQ<2THENRETURN
81 GOSUB120:GOTO80
82 GOSUB80:Z=H:X=H:IFQ=1THENZ=0:X=7
83 FORL1=ZTOX:FORL2=0TO7:D=L2:H=L1:GOSUB31
84 OL=209:OC=0:IFO1=209ORC$="▣"THENOL=215:OC=2
85 GOSUB30:NEXT:GOSUB64:NEXT:RETURN
90 PRINT"▣":FORT=1TO10:PRINT:NEXT:PRINT"▣                                        ▪]]":RETURN
95 GOSUB90:PRINT"▣■        PLEASE WAIT":FORT=0TO60*8:POKEJ+T,PEEK(RO+((31*8)*GR)+T)
:NEXT:GOSUB90:RETURN
96 FORT=0TO19:POKE7703+T,DI+T:NEXT:PRINT"▣QQQQ▣■";DI;"▌ ";TAB(19);DI+T-1:RETURN
100 INPUT"]▣■]]]■1◣=▣SAVE◣ OR■ 0◣=▣LOAD ";O
102 IFO>1ORO<0THENGOSUB120:GOTO100
103 PRINT"]■":POKEU,240:OPEN1,1,0,"CHA"
104 FORL1=J+(DI*8)TOJ+((DI+20)*8)-1
105 SV=INT((L1-J)/8):IFO=0THENINPUT#1,A:POKEL1,A:POKEC,29:PRINT"]■LOADING:";SV
106 IFO=1THENPRINT#1,(PEEK(L1)):POKEC,29:PRINT"]■SAVING:";SV
107 PRINT"QQQQQQQQQ▶▶▶▶◣▣PLEASE WAIT■"
108 POKEC,25:NEXT:CLOSE1:POKEU,255:C$=" ":RETURN
110 Z=CH:GOSUB55:FORL1=0TO7:POKEJ+(8*CH)+L1,PEEK(J+(8*Z)+L1):NEXT:CH=Z:C$=" ":RE
TURN
120 GOSUB90:POKEV1,230:POKEC,26:FORT=1TO500:NEXT:POKEC,25:POKEV1,0:RETURN
READY.
```

Time

This is a useful program written by William Fong that, when run, will display the time constantly at the top left corner of the screen. The program runs in interrupts on the 64 and the time is displayed in reverse field.

```
0 REM ** TIME ** BY WILLIAM FONG **
1 PRINT"]▣":P=49152:POKEP+4129,0:POKEP+4128,0
2 DEF FNA(G)=INT(G/10)*16+(G-INT(G/10)*10):POKE792,193
3 FORN=0TO91:READD$:Q=ASC(LEFT$(D$,1))-48:W=ASC(RIGHT$(D$,1))-48
4 POKEP+N,(Q+(Q>9)*7)*16+(W+(W>9)*7):NEXT
5 U=P+48:H=INT(U/256):L=U-H*256:J=INT(P/256):I=P-J*256
6 POKEP+8,L:POKEP+9,H:POKEP+16,L:POKEP+17,H:POKEP+24,L:POKEP+25,H
7 POKEP+81,I:POKEP+86,H:POKEP+7182,PEEK(P+7182)OR128:SYSP+79
8 INPUT"▣HOURS";Z:POKEP+7179,FNA(Z):INPUT"MINUTES";X:POKEP+7178,FNA(X)
9 INPUT"SECONDS";C:POKEP+7177,FNA(C):POKEP+7176,0:PRINT"]▣":NEW
10 DATAA2,00,AD,0B,DC,29,7F,20,00,00,A2,03,AD,0A,DC,20,00,00,A2,06,AD,09,DC
11 DATA20,00,00,AD,08,DC,A9,BA,8D,02,04,8D,05,04,A9,07,8D,02,D8,8D,05,D8
12 DATA4C,31,EA,48,29,F0,4A,4A,4A,4A,18,69,B0,9D,00,04,68,29,0F,18,69,B0,9D
13 DATA01,04,A9,07,9D,00,D8,9D,01,D8,60,78,A9,00,8D,14,03,A9,00,8D,15,03,58,60
READY.
```

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Machine	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	Average
CBM with PETX2	0.87	5.1	9.4	10.3	11.2	16.5	26.0	6.0	17.5
IBM PC	1.5	5.2	12.1	12.6	13.6	23.5	37.4	3.5	17.6
Osborne 01	1.4	4.4	11.7	11.6	12.4	21.9	34.9	6.1	19.9
Apple 111	1.7	7.2	13.5	14.5	16.0	27.0	42.5	7.5	24.7
ACT Sirius 1	2.0	7.4	17.0	17.5	19.8	35.4	55.9	4.3	24.8
Apple 2	1.3	8.5	16.0	17.8	19.1	28.6	44.8	10.7	30.4
Commodore CBM 8032	1.7	10.0	18.4	20.3	21.9	32.4	51.0	11.9	34.3

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MACHINE CODE

Program lister

This month we have a routine for the 64 which could be useful in the Basic Aids. It scrolls the listing by use of the cursor keys. The routine was written by K.K.Loke and all that we have done is to select a new location so that it does not conflict with previous routines.

The routine wedges into the Basic warm start vector and can be used to scroll the listing giving a bi-directional lister.

This is obtained by moving the cursor to the bottom of the screen and pressing cursor down, or moving the cursor to the top and pressing cursor up. When listing up, three blank lines are inserted and the line is listed at the top.

To exit the lister, press the CLR/HOME key. To re-enable, press the return key.

Note that this routine will be permanently disabled by the RUN/STOP RESTORE keys or the previously published merge routine and can be re-initialised by SYS(50928).

The suggested modifications to the ROM routine calls to enable the routine to work on the VIC-20 are:

*EA13:E5B4:E716:E9F0:ECEF:E9C8:E9FF:E9A9:A637:A613:A474:A6C9:A483

---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ----

+EAA1:E5CF:E742:EA7E:EDFC:EA56:EA8D:EA32:CD37:C613:C474:C6C9:C483

Where * are the values for the 64 and + should replace them for the VIC.

The other change would be the values stored into $0300/1 for resetting then 'ierror' vector the values for the VIC are:

Lo byte (1st) Hi byte (2nd)
2390 LDA #$4F 2410 LDA #$E4

The program is presented in the usual two ways. First is the assembler source file (MIKRO) and then the program that you are more likely to use, the Basic Loader. With the loader, just type it in and then run (save it before running). If there are no errors in the data, your lister is now running.

```
 1000 C6F0           *=$C6F0
 1010 C6F0           !=========================
 1020 C6F0           !    PROGRAM   LISTER
 1030 C6F0           !
 1040 C6F0           !    BY K. K. LOKE 1984
 1050 C6F0           !=========================
 1060 C6F0           !
 1070 C6F0           !---- NEW VECTORS ----
 1080 C6F0 A9FB                LDA #<IMAIN             ! PUT NEW 'WARMSTART' V
ECTORS
 1090 C6F2 A0C6                LDY #>IMAIN
 1100 C6F4 8D0203              STA $0302
 1110 C6F7 8C0303              STY $0303
 1120 C6FA 60                  RTS
 1130 C6FB           !
 1140 C6FB A905     IMAIN      LDA #<CTOG              ! PUT NEW 'IERROR' VECT
ORS
 1150 C6FD 8D0003              STA $0300
 1160 C700 A9C7                LDA #>CTOG
 1170 C702 8D0103              STA $0301
 1180 C705           !
 1190 C705           !---- WAIT & TOGGLE CURSOR ----
 1200 C705 A5C6     CTOG       LDA $C6                 ! TEST FOR INPUT FROM K
EYBOARD
 1210 C707 85CC                STA $CC                 ! NO INPUT, KEEP CURSOR
 FLASHING
 1220 C709 F0FA                BEQ CTOG                ! REPEAT IF NO INPUT
 1230 C70B 78                  SEI
 1240 C70C A5CF                LDA $CF            ! TEST CURSOR BLINK PHA
SE
 1250 C70E F00C                BEQ KPRESS         ! 'OFF' ?
 1260 C710 A5CE                LDA $CE            ! ON, GET CHAR UNDER CU
RSOR
 1270 C712 AE8702              LDX $0287          ! GET COLOUR UNDER CURS
OR
 1280 C715 A000                LDY #$00
 1290 C717 84CF                STY $CF            ! SWITCH 'OFF' CURSOR
 1300 C719 2013EA              JSR $EA13          ! REPLACE ORIGINAL CHAR
ACTER
 1310 C71C        ! & COLOUR TO SCREEN
 1320 C71C        !
 1330 C71C        !---- CHECK WHAT KEYPRESS ----
 1340 C71C 20B4E5 KPRESS       JSR $E5B4          ! INPUT FROM KEYBOARD
 1350 C71F C911                CMP #$11           ! CURSOR UP ?
 1360 C721 F007                BEQ CPUT           ! YES
 1370 C723 C991                CMP #$91           ! CURSOR DOWN ?
 1380 C725 F003                BEQ CPUT           ! YES
 1390 C727 4CD1C7              JMP IPUT           !CLOSENOT CURSOR
 1400 C72A 2016E7 CPUT         JSR $E716          ! PRINT CURSOR AND SET
$D6
 1410 C72D A5D6                LDA $D6            ! GET POSITION OF CURSO
R
 1420 C72F C918                CMP #$18           !CLOSEBOTTOM OF SCREEN
?
 1430 C731 F07B                BEQ ULIST          ! YES
 1440 C733 C900                CMP #$00           ! TOP OF SCREEN ?
 1450 C735 D0CE                BNE CTOG           ! NO, GET NEXT CHAR
 1460 C737        !
 1470 C737        !---- SCROLL SCREEN DOWN ----
 1480 C737 A903                LDA #$03
 1490 C739 85D6                STA $D6            ! $D6 AS COUNTER
 1500 C73B A218   SCOPY2       LDX #$18           ! .X AS POINTER
 1510 C73D 20F0E9 SCOPY        JSR $E9F0          ! SET SCREEN POINTERS
 1520 C740 E000                CPX #$00           ! CHECK IF ALL DONE
 1530 C742 F00D                BEQ CLINE          ! ALL DONE
 1540 C744 BDEFEC              LDA $ECEF,X        ! GET SCREEN LINE ADDR.
 LOW
 1550 C747 85AC                STA $AC
 1560 C749 B5D8                LDA $D8,X          ! GET SCREEN LINK ADDR.
 1570 C74B 20C8E9              JSR $E9C8          ! COPY ONE LINE TO ANOT
HER
 1580 C74E CA                  DEX
 1590 C74F 10EC                BPL SCOPY          ! IF .X ISN'T 0, DO NEX
T LINE
 1600 C751 20FFE9 CLINE        JSR $E9FF          ! CLEAR 1ST SCREEN LINE
 1610 C754 A9C7                LDA #>RETURN       ! REPLACE RTS ADDR. PUL
LED BY
 1620 C756 48                  PHA                ! $E9A9. SAVE HI BYTE
 1630 C757 A963                LDA #<RETURN-1
 1640 C759 48                  PHA                ! SAVE LO BYTE ON STACK
 1650 C75A 48                  PHA                ! DUMMY ADDRESSES FOR E
9A9 PLA'S
 1660 C75B 48                  PHA
 1670 C75C A201                LDX #$01           ! SET SCREEN LINE INDEX
 TO 1
 1680 C75E 8DA502              STA $02A5
 1690 C761 20A9E9              JSR $E9A9          !CLOSERE-SET SCREEN LIN
```

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```
K TABLE
 1700 C764 C6D6    RETURN     DEC $D6
 1710 C766 D0D3               BNE SCOPY2          ! SCROLL SCREEN DOWN 3X
 1720 C768              !
 1730 C768              !---- (-) LINE NO. SEARCH ----
 1740 C768 A52B    BSTART     LDA $2B             ! START SEARCH FROM
 1750 C76A A62C               LDX $2C
 1760 C76C A62C               LDX $2C             ! BEGINNING OF BASIC
 1770 C76E A001    SADDR      LDY #$01            ! POINT TO HI BYTE OF L
INK ADDR.
 1780 C770 855F               STA $5F
 1790 C772 8660               STX $60
 1800 C774 48                 PHA
 1810 C775 B15F               LDA ($5F),Y         ! CHECK FOR END OF BASI
C
 1820 C777 F029               BEQ LADDR           ! YES
 1830 C779 38                 SEC                 ! PREPARE C FOR SUBTRAC
TION
 1840 C77A C8                 INY                 ! POINT TO LO BYTE OF L
INE NO.
 1850 C77B B15F               LDA ($5F),Y         ! LOAD IT
 1860 C77D E514               SBC $14             ! SAME AS CURRENT LINE
 NO LO ?
 1870 C77F C8                 INY                 ! POINT TO HI BYTE OF L
INE NO.CLOSE
 1880 C780 B15F               LDA ($5F),Y         ! LOAD IT
 1890 C782 E515               SBC $15             ! SAME AS CURRENT LINE
 NO HI ?
 1900 C784 B00B               BCS LADDR1          ! YES
 1910 C786 86FC               STX $FC             ! HI BYTE OF LINE ADDR.
 1920 C788 68                 PLA
 1930 C789 85FB               STA $FB             ! LO BYTE OF LINE ADDR.
 1940 C78B 88                 DEY
 1950 C78C 2037A6             JSR $A637           ! GET ADDR. OF NEXT LIN
E
 1960 C78F 90DD               BCC SADDR           ! CONTINUE SEARCH
 1970 C791 68       LADDR1    PLA
 1980 C792 C52B               CMP $2B             ! LINE FOUND=1ST LINE I
N MEM ?
 1990 C794 D00D               BNE LADDR+1
 2000 C796 E42C               CPX $2C
 2010 C798 D009               BNE LADDR+1         ! NOT EQUAL
 2020 C79A A9FF               LDA #$FF            ! EQUAL
 2030 C79C 8514               STA $14             ! STORE MAX LINE NO
 2040 C79E 8515               STA $15             ! IN 14 & 15
 2050 C7A0 B0C6               BCS BSTART          ! GET LAST LINE
 2060 C7A2 68       LADDR     PLA                 ! FOUND, TIDY STACK
 2070 C7A3 A5FB               LDA $FB             ! GET LO BYTE ADDR.
 2080 C7A5 855F               STA $5F             ! STORE IT
 2090 C7A7 A5FC               LDA $FC             ! GET HI BYTE ADDR.
 2100 C7A9 8560               STA $60             ! STORE IT
 2110 C7AB 18                 CLC
 2120 C7AC 9009               BCC LIST            ! FORCED
 2130 C7AE              !
 2140 C7AE              !---- (+) LINE NO. SEARCH ----
 2150 C7AE E614     ULIST     INC $14             ! INCREMENT CURRENT LIN
E NO.
 2160 C7B0 D002               BNE LLADDR
 2170 C7B2 E615               INC $15
 2180 C7B4 2013A6 LLADDR      JSR $A613           ! FIND ITS ADDR.
 2190 C7B7              !
 2200 C7B7              !---- LIST LINE.----
 2210 C7B7 A001   LIST        LDY #$01                 ! POINT TO HI-BYTE OF L
INK ADDR.
 2220 C7B9 B15F               LDA ($5F),Y              ! END OF BASIC ?
 2230 C7BB D007               BNE LIST1                ! NO
 2240 C7BD 8514               STA $14                  ! YES SET 0 IN
 2250 C7BF 8515               STA $15                  ! 14 & 15
 2260 C7C1 4C74A4             JMP $A474                ! PRINT 'READY'
 2270 C7C4 C8     LIST1       INY                      ! POINT TO LO BYTE
 2280 C7C5 B15F               LDA ($5F),Y              ! LOAD IT
 2290 C7C7 8514               STA $14                  ! STORE IT
 2300 C7C9 C8                 INY                      ! POINT TO HI BYTE
 2310 C7CA B15F               LDA ($5F),Y              ! LOAD IT
 2320 C7CC 8515               STA $15                  ! STORE IT
 2330 C7CE 4CC9A6             JMP $A6C9                ! LIST LINE
 2340 C7D1              !
 2350 C7D1              !---- RESTORE IERROR VECTORS ----
 2360 C7D1              !     & EXIT TO WARM START
 2370 C7D1 8D7702 IPUT        STA $0277                ! REPLACE BYTE INTO BUF
FER
 2380 C7D4 E6C6               INC $C6                  ! NO. OF CHAR. IN BUFFE
R=1
 2390 C7D6 A98B               LDA #$8B                 ! RESET 'IERROR' VECTOR
S
 2400 C7D8 8D0003             STA $0300
 2410 C7DB A9E3               LDA #$E3
 2420 C7DD 8D0103             STA $0301
 2430 C7E0              !
 2440 C7E0 4C83A4             JMP $A483
 2450 C7E3              !
```

```
10 I=50928:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<>31298THENPRINT"██CHECKSUM ERROR.":END
60 IFI<>51171THENPRINT"██NO. OF DATA ERROR":END
70 SYS50928:PRINT"██+/- LISTER INITIALISED"
80 END
100 DATA169,251,160,198,141,2,3
110 DATA140,3,3,96,169,5,141
120 DATA0,3,169,199,141,1,3
130 DATA165,198,133,204,240,250,120
140 DATA165,207,240,12,165,206,174
150 DATA135,2,160,0,132,207,32
160 DATA19,234,32,180,229,201,17
170 DATA240,7,201,145,240,3,76
180 DATA209,199,32,22,231,165,214
190 DATA201,24,240,123,201,0,208
200 DATA206,169,3,133,214,162,24
210 DATA32,240,233,224,0,240,13
220 DATA189,239,236,133,172,181,216
230 DATA32,200,233,202,16,236,32
240 DATA255,233,169,199,72,169,99
250 DATA72,72,72,162,1,141,165
260 DATA2,32,169,233,198,214,208
270 DATA211,165,43,166,44,166,44
280 DATA160,1,133,95,134,96,72
290 DATA177,95,240,41,56,200,177
300 DATA95,229,20,200,177,95,229
310 DATA21,176,11,134,252,104,133
320 DATA251,136,32,55,166,144,221
330 DATA104,197,43,208,13,228,44
340 DATA208,9,169,255,133,20,133
350 DATA21,176,198,104,165,251,133
360 DATA95,165,252,133,96,24,144
370 DATA9,230,20,208,2,230,21
380 DATA32,19,166,160,1,177,95
390 DATA208,7,133,20,133,21,76
400 DATA116,164,200,177,95,133,20
410 DATA200,177,95,133,21,76,201
420 DATA166,141,119,2,230,198,169
430 DATA139,141,0,3,169,227,141
440 DATA1,3,76,131,164,-1
READY.
```

Sprite routines

This month we are publishing seven Sprite manipulation routines for the 64, written in machine code

The main routine is to display the Sprite in large on the right hand side of the screen. The Sprite is represented by a large dot (point on) and a small dot (point off). There are five routines to reverse, invert, mirror, transfer, and rotate a certain Sprite, and also a routine to save off the Sprites to tape or disk.

Display

This routine is called by SYS49152, spno. It will display a large version of the Sprite spno (0-255) on the screen. Note the values passed through on all of the routines are the actual block location of the Sprite in bank 0.

Reverse

This routine is called by SYS49239,spno and will reverse each point (eg if on, turn off and vice-versa).

Invert

This routine is called by SYS49254,spno. It will turn Sprite spno upside down.

Mirror

This routine is called by SYS40306,spno. It mirrors the Sprite down the center axis so that the Sprite is facing the other way.

Transfer

This routine is called by SYS49379,no1,no2 and will copy the Sprite in no2 into the area for Sprite no1.

Rotate

Called by STS49403,no, this routine will rotate Sprite no 90 degress anti-clockwise. Note that due to the non-square shape of the Sprite, the right hand 3 points all the way down will be lost.

Save

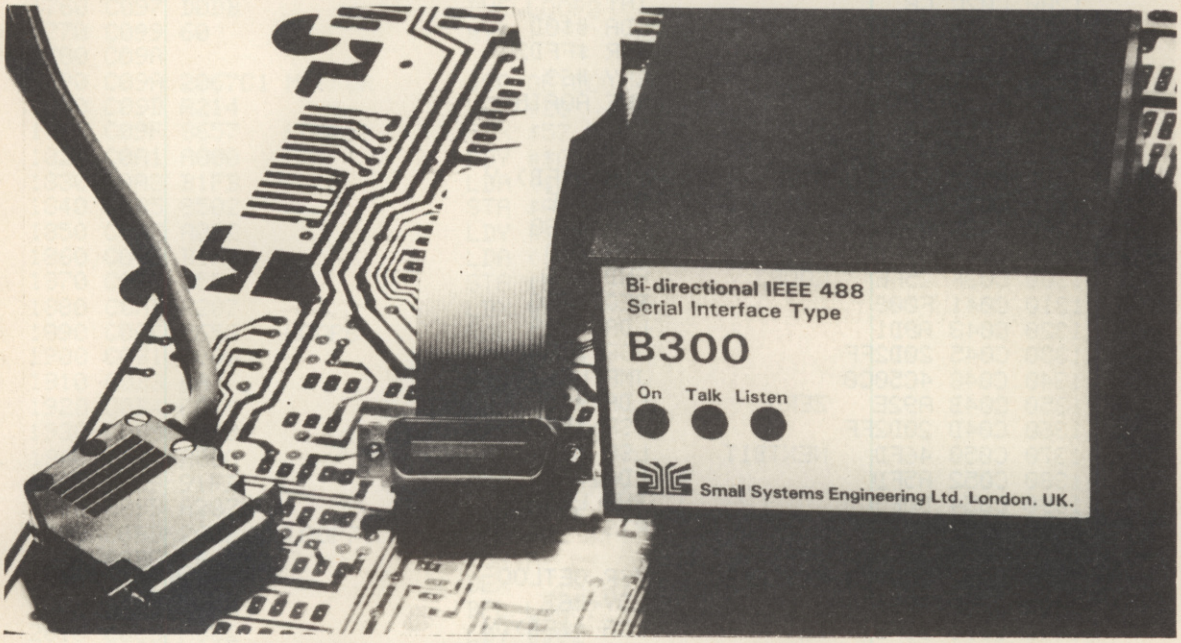
When all of your Sprites are completed, you can save them off using SYS49533,no1,no2,"filename",dev. This will save the memory between and including no1 and no2. The Sprites may then be loaded in with LOAD"filename",dev,1. Note dev is the device number (1 for tape and 8 for disk).

Note: The routines are presented in MIKRO 64 source code and can be entered using MIKRO, or by using mini-mon in hints and tips and changing the bytes shown in the third column of numbers on the source.

To save the routines off, using any monitor enter .S"SPRDISP",dev,-C000.C1E0

```
  10 033C         II          =  $02C0
  20 033C         JJ          =  $02C1
  30 033C         IIDIV8      =  $02C2
  40 033C         UI          =  $02C3
  50 033C         BIT         =  $02C4
  60 033C         TEMP        =  $02C5
1000 C000         *=$C000
1010 C000 2067C1 DISPLAY     JSR GETLOC                 !SYS49152,NO
1020 C003 2066E5             JSR $E566
1030 C006 A911               LDA #17
1040 C008 20D2FF             JSR $FFD2
1050 C00B A911               LDA #17
1060 C00D 20D2FF             JSR $FFD2
1070 C010 A000               LDY #$00
1080 C012 A20F    AGAIN      LDX ##$0F
1090 C014 86FE               STX $FE
1100 C016 A91D    POSITION   LDA #29
1110 C018 20D2FF             JSR $FFD2
1120 C01B C6FE               DEC $FE
1130 C01D A6FE               LDX $FE
1140 C01F D0F5               BNE POSITION
1150 C021 2037C0             JSR DISP
1160 C024 C8                 INY
1170 C025 2037C0             JSR DISP
1180 C028 C8                 INY
1190 C029 2037C0             JSR DISP
```

TYPE B300
IEEE-488 SERIAL INTERFACE



The B300 interface is a bidirectional unit which enables IEEE-488 controllers to communicate with serial devices such as KSR terminals, modems, laboratory instruments and other computer systems.
The B300 replaces the SSE type B and B200 bidirectional interfaces. It is fully compatible with both earlier units in that it incorporates both software selectable and switch selectable Baud rate control. This flexibility has been achieved by designing the unit around an 8748 single chip microprocessor. The 8784 also provides a 40 character input buffer which provides flexibility in handling high speed data input.

Specification
IEEE-488 functions: Source Handshake (SH), Acceptor Handshake (AH), Talker (T), Listener (L) and Extended Listener (LE).

Switch selectable options
Parity—ODD/EVEN
Parity—Enable/Disable
Baud Rates—110, 300, 1200, 9600
Talk Addresses—4, 5, 6, 7
Listen addresses—4, 5, 6, 7
Code Conversion—Mode A/B
No. of Data Bits—7/8

Software selectable options
Baud Rate selection using a secondary listen address followed by a configuring byte which sets input baud rates. 16 different baud rates in the range 50-19,200 baud can be selected. Input and output baud rates can be set to different values.

RS232C signals
Transmitted Data, Receive Data, Request to Send, Clear to Send, Data Terminal Ready.

Connectors
IEEE-488 lead—24 way male ribbon connector. Female 24 way ribbon and an edge connector to fit PETs IEEE port supplied as options.
RS232 lead—25 way D-Type connector (male or female).

Packaging
The B300 is housed in a small instrument case with integral power suppies. ON, LISTEN and Talk indicators are provided on the front panel.

Options
20mA opto-isolated current loop adapter mounted in a D-type connector shell which provides active or passive current loop 10.
Communications PROM—designed to optimise the B300's performance with the INTERCOMM general purpose asynchronous communications package.

Warranty
90 days against defective workmanship or component failure under normal operating conditions.

Prices

B300	£186.00
Current Loop Adaptor	£25.00

small systems engineering limited
2-4 Canfield Place, London NW6 3BT. Telephone: 328 7145 Telex 264538

```
1200 C02C C8                   INY
1210 C02D A90D                 LDA #$0D
1220 C02F 20D2FF               JSR $FFD2
1230 C032 C03F                 CPY #63
1240 C034 D0DC                 BNE AGAIN
1250 C036 60                   RTS
1255 C037        !
1260 C037 B1FB   DISP          LDA ($FB),Y
1270 C039 85FE                 STA $FE
1280 C03B A980                 LDA #$80
1290 C03D 85FD                 STA $FD
1300 C03F 25FE   LOOP2   .     AND $FE
1310 C041 F008                 BEQ ZERO
1320 C043 A0D1                 LDA #209
1330 C045 20D2FF               JSR $FFD2
1340 C048 4C50C0               JMP NEXTBIT
1350 C04B A92E   ZERO          LDA #46
1360 C04D 20D2FF               JSR $FFD2
1370 C050 46FD   NEXTBIT       LSR $FD
1380 C052 A5FD                 LDA $FD
1390 C054 D0E9                 BNE LOOP2
1400 C056 60                   RTS
1410 C057        !
1420 C057 2067C1 REVERSE       JSR GETLOC                   !SYS49239,NO
1430 C05A A03E                 LDY #62
1440 C05C B1FB   REV           LDA ($FB),Y
1450 C05E 49FF                 EOR #$FF
1460 C060 91FB                 STA ($FB),Y
1470 C062 88                   DEY
1480 C063 10F7                 BPL REV
1490 C065 60                   RTS
1500 C066        !
1510 C066 2067C1 INVERT        JSR GETLOC                   !SYS49254,NO
1520 C069 A5FC                 LDA $FC
1540 C06B 85FE                 STA $FE
1550 C06D A5FB                 LDA $FB
1560 C06F 18                   CLC
1570 C070 693C                 ADC #60
1580 C072 85FD                 STA $FD
1590 C074 A000   LOOP3         LDY #$00
1600 C076 B1FB   LOOP4         LDA ($FB),Y
1610 C078 8502                 STA $02
1620 C07A B1FD                 LDA ($FD),Y
1630 C07C 91FB                 STA ($FB),Y
1640 C07E A502                 LDA $02
1650 C080 91FD                 STA ($FD),Y
1660 C082 C8                   INY
1670 C083 C003                 CPY #$03
1680 C085 D0EF                 BNE LOOP4
1690 C087 C6FD                 DEC $FD
1700 C089 C6FD                 DEC $FD
1710 C08B C6FD                 DEC $FD
1720 C08D E6FB                 INC $FB
1730 C08F E6FB                 INC $FB
1740 C091 E6FB                 INC $FB
1745 C093 A5FB                 LDA $FB
1750 C095 C5FD                 CMP $FD
```

```
1760 C097 D0DB                 BNE LOOP3
1770 C099 60                   RTS
1780 C09A           !
1790 C09A 2067C1 MIRROR        JSR GETLOC                    !SYS40306,NO
1800 C09D A214                 LDX #20
1810 C09F 8657   LOOP5         STX $57
1820 C0A1 A000                 LDY #$00
1830 C0A3 B1FB                 LDA ($FB),Y
1840 C0A5 8502                 STA $02
1850 C0A7 A002                 LDY #$02
1860 C0A9 B1FB                 LDA ($FB),Y
1870 C0AB 8558                 STA $58
1880 C0AD A207                 LDX #$07
1890 C0AF 2658   LOOP6         ROL $58
1900 C0B1 A000                 LDY #$00
1910 C0B3 6A                   ROR A
1920 C0B4 CA                   DEX
1930 C0B5 10F8                 BPL LOOP6
1940 C0B7 A000                 LDY #$00
1950 C0B9 91FB                 STA ($FB),Y
1960 C0BB A207                 LDX #$07
1970 C0BD 2602   LOOP7         ROL $02
1980 C0BF 6A                   ROR A
1990 C0C0 CA                   DEX
2000 C0C1 10FA                 BPL LOOP7
2010 C0C3 A002                 LDY #$02
2020 C0C5 91FB                 STA ($FB),Y
2030 C0C7 A001                 LDY #$01
2040 C0C9 B1FB                 LDA ($FB),Y
2050 C0CB 8502                 STA $02
2060 C0CD A207                 LDX #$07
2070 C0CF 2602   LOOP8         ROL $02
2080 C0D1 6A                   ROR A
2090 C0D2 CA                   DEX
2100 C0D3 10FA                 BPL LOOP8
2110 C0D5 91FB                 STA ($FB),Y
2120 C0D7 E6FB                 INC $FB
2130 C0D9 E6FB                 INC $FB
2140 C0DB E6FB                 INC $FB
2150 C0DD A657                 LDX $57
2160 C0DF CA                   DEX
2170 C0E0 10BD                 BPL LOOP5
2180 C0E2 60                   RTS
2190 C0E3           !
2200 C0E3 2067C1 TRANSFER      JSR GETLOC                    !SYS49379,NO1,NO2
2210 C0E6 A5FB                 LDA $FB
2220 C0E8 85FD                 STA $FD
2230 C0EA A5FC                 LDA $FC
2240 C0EC 85FE                 STA $FE
2250 C0EE 2067C1               JSR GETLOC
2260 C0F1 A03E                 LDY #62
2270 C0F3 B1FB   LOOP9         LDA ($FB),Y
2300 C0F5 91FD                 STA ($FD),Y
2310 C0F7 88                   DEY
2320 C0F8 10F9                 BPL LOOP9
2330 C0FA 60                   RTS
2340 C0FB           !
```

```
2350 C0FB 2067C1 ROTATE       JSR GETLOC                 !SYS49403,NO
2360 C0FE A03E                LDY #62
2370 C100 B1FB   ROT1         LDA ($FB),Y
2380 C102 994003              STA $0340,Y
2390 C105 A900                LDA #$00
2400 C107 91FB                STA ($FB),Y
2410 C109 88                  DEY
2420 C10A 10F4                BPL ROT1
2430 C10C 8DC002              STA II
2435 C10F A914                LDA #20
2440 C111 8DC102              STA JJ
2450 C114 A200                LDX #$00
2460 C116 BD4003 ROT2         LDA $0340,X
2470 C119 8DC302              STA UI
2480 C11C A000                LDY #$00
2490 C11E 20A2C1 ROT3         JSR CALCP
2750 C121 20C6C1              JSR CALCB
2890 C124 0EC302              ASL UI
2900 C127 900F                BCC ROT4
2905 C129 8CC702              STY TEMP+2
2906 C12C A000                LDY #$00
2910 C12E B1FD                LDA ($FD),Y
2920 C130 0DC402              ORA BIT
2930 C133 91FD                STA ($FD),Y
2940 C135 ACC702              LDY TEMP+2
2980 C138 CEC102 ROT4         DEC JJ
2990 C13B ADC102              LDA JJ
3010 C13E 100A                BPL ROT5
3020 C140 A914                LDA #20
3030 C142 8DC102              STA JJ
3040 C145 EEC002              INC II
3050 C148 A007                LDY #$07
3060 C14A C8     ROT5         INY
3070 C14B C008                CPY #$08
3080 C14D D0CF                BNE ROT3
3090 C14F E8                  INX
3100 C150 E03F                CPX #63
3110 C152 D0C2                BNE ROT2
3120 C154 60                  RTS
3400 C155         !
3410 C155 8EC502 TOP2         STX TEMP
3420 C158 AA                  TAX
3430 C159 A901                LDA #$01
3440 C15B E000                CPX #$00
3450 C15D F004                BEQ TOP2DONE
3460 C15F 0A     TOP21        ASL A
3470 C160 CA                  DEX
3480 C161 D0FC                BNE TOP21
3490 C163 AEC502 TOP2DONE     LDX TEMP
3500 C166 60                  RTS
3510 C167         !
3520 C167 20FDAE GETLOC       JSR $AEFD
3530 C16A 209EB7              JSR $B79E
3540 C16D 86FB                STX $FB
3550 C16F A900                LDA #$00
3560 C171 85FC                STA $FC
3570 C173 A005                LDY #$05
```

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Do you use tapes? Are you sick and tired of waiting for your programs to be Loaded/Saved from/on the tape? Then you need a **TORNADO!!** Tornado allows you to Save/Load/Verify your Basic/machine code programs faster than a CBM 1541 disk drive does!! Due to popular demand! Tornado now comes with new and more powerful commands plus extra instructions to assist you in making fast versions of your existing machine code/Basic programs. Tornado is available on tape for CBM 64 and 8K+ Vic 20.

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Available for CBM 64 and the Vic 20 now is the **ROM-FILE** which contains a complete disassembly of CBM 64/Vic 20 Rom with comments! As well as a complete description of all 6502/6510 instructions and addressing modes + a complete listing of a machine code monitor and more!

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Mr. Chip

BUSINESS SOFTWARE

ACCOUNTS PACKAGE

This series of programs is intended to provide the small to medium size business with a total accountancy package for use with the Commodore 64.

PURCHASE LEDGER

Up to two hundred purchase invoices may be recorded at a time, the data being stored on disk or cassette. The data can then be transferred to the PURCHASE ANALYSIS program for breakdown into months and years. Features include up to 100 supplier accounts and 50 nominal accounts, VAT inputs and printout facility **£25.00**

SALES LEDGER

Records up to two hundred invoices at a time, these can be transferred to the SALES ANALYSIS program for analysis. Features include printouts of your invoices, Current List, VAT outputs and customer accounts, up to 100 customer accounts may be used. **£25.00**

SALES JOURNAL

Designed specifically for use with a till for recording takings. Enter daily or weekly cash sales, cheque sales, other takings (non-sales) and returns. Printout facility with totals of cash takings to date, total cheques, total Gross sales and takings, total nett sales and takings, VAT output accounts. **£25.00**

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This enables any number of invoices to be processed into monthly and annual breakdowns. Up to five years accounts at a time may be stored. The program allows storage of data and processing from any given month of that financial year. Nominal accounts are stored annually and a current creditor total recorded for use in the FINAL ACCOUNTS program. **£25.00**

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This program processes a data in the same way as the PURCHASE ANALYSIS, but there are no nominal accounts. **£25.00**

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```
 3580 C175 06FB   LOOP1       ASL $FB
 3590 C177 26FC               ROL $FC
 3600 C179 88                 DEY
 3610 C17A 10F9               BPL LOOP1
 3620 C17C 60                 RTS
 3680 C17D         !
 3690 C17D 2067C1 SAVE        JSR GETLOC                    !SYS49533,NO1,NO2
 3700 C180 A5FB               LDA $FB
 3710 C182 85FD               STA $FD
 3720 C184 A5FC               LDA $FC
 3730 C186 85FE               STA $FE
 3740 C188 20FDAE             JSR $AEFD
 3750 C18B 209EB7             JSR $B79E
 3760 C18E E8                 INX
 3770 C18F 206DC1             JSR GETLOC+6
 3775 C192 20FDAE             JSR $AEFD
 3780 C195 20D4E1             JSR $E1D4
 3790 C198 A9FD               LDA #$FD
 3800 C19A A6FB               LDX $FB
 3810 C19C A4FC               LDY $FC
 3820 C19E 20D8FF             JSR $FFD8
 3830 C1A1 60                 RTS
 3840 C1A2         !
10000 C1A2 A5FB   CALCP       LDA $FB
10010 C1A4 85FD               STA $FD
10020 C1A6 A5FC               LDA $FC
10030 C1A8 85FE               STA $FE
10040 C1AA ADC102             LDA JJ
10050 C1AD 0A                 ASL A
10060 C1AE 18                 CLC
10070 C1AF 6DC102             ADC JJ
10080 C1B2 18                 CLC
10090 C1B3 65FD               ADC $FD
10095 C1B5 85FD               STA $FD
10100 C1B7 ADC002             LDA II
10110 C1BA 4A                 LSR A
10120 C1BB 4A                 LSR A
10130 C1BC 4A                 LSR A
10140 C1BD 8DC202             STA IIDIV8
10150 C1C0 18                 CLC
10160 C1C1 65FD               ADC $FD
10165 C1C3 85FD               STA $FD
10170 C1C5 60                 RTS
10260 C1C6         !
11000 C1C6 ADC202 CALCB       LDA IIDIV8
11010 C1C9 0A                 ASL A
11020 C1CA 0A                 ASL A
11030 C1CB 0A                 ASL A
11040 C1CC 8DC402             STA BIT
11050 C1CF A907               LDA #$07
11060 C1D1 38                 SEC
11070 C1D2 EDC002             SBC II
11080 C1D5 18                 CLC
11090 C1D6 6DC402             ADC BIT
11100 C1D9 2055C1             JSR TOP2
11110 C1DC 8DC402             STA BIT
11120 C1DF 60                 RTS
```

Safety Fast

Also Available
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The fast way to get 20 Mbytes safely tucked away is with Alpha 10.
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Not only this, but its very high resistance to shock, vibration and contamination makes the Alpha 10 the most reliable removable cartridge disk drive around.
As well as the IBM PC, the Alpha 10 is compatible with most micros, including Act Sirius and Apricot, Apple II, Commodore, and DEC 11.
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COMPUTER CARE KIT
2
3

Floppy range

Esselte have launched their own brand of floppy disks. The 51/4 disks range in price from £2.75 for single-sided double-density soft sector to £4.20 for double-sided double-density with 77-18 per side.

Two booklets entitled "All you need to know about floppy disks" and "Caring for your computer or Word Processor" are both available from Esselte free of charge.

A computer care kit priced at £8.69 + VAT has been designed by Esselte specifically for the home computers with cassette recorders. The kit comprises a cassette head cleaner, anti-static foam, screen cleaner and 25 lint free wipes.

Contact: Esselte Dynamo Ltd, Spur Road, Feltham, Middlesex TW14 0SL. Tel: 01-890 1388.

Catalogue

The second free issue of "Supercat" Electronics' Catalogue is now available.

The Summer issue contains test and Measuring Instruments, Kits, Connectors, Leads and Accessories. The aim of the catalogue is to offer the reader a choice of prices, specifications and Ergomonics for all applications.

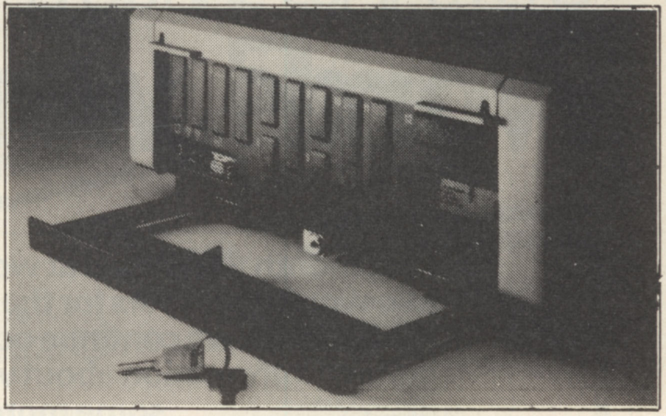
Contact: Supercat Electronics Ltd, PO Box 201, St Albans, Herts. AL1 4EN. Tel: 0727 62171.

Improved package

FCG Computer Systems have revised their Integrated Accounting, Job Costing and Payroll packages for the building industry. New facilities have been added and the operating speed has been increased ten times the previous rate. These additional facilities do not alter the price of £5000 for the whole system.

A balance sheet can be set up with the new profit and loss facility providing facilities for budgetary control and comparison with last year's performance. More control over printing is offered enabling remittance advice notes, interim applications and interim statements to be printed.

Contact: FCG Computer Systems, Hamilton House, Mabledon Place, London WC1 9BD. Tel: 01 388 7345.



Lock it

Inmac have designed a Micro Security Lock for the Commodore 4000/8000 series which will totally immobilise them unless the key is used. The complete kit costs £39 and additional base frames cost £19.

The lock comes in two pieces and the base frame can be either screwed or bonded with strong glue to work surface. Extra base frames are available if the computer has to be moved around. The computer frame is glued to the frame and the two bits fit together with a lock to secure them. Potential thieves would have to move the whole table.

Contact: Inmac (UK) Ltd., Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.

Safe storage

Fire can destroy entire offices records in minutes. EA Rosengrens of Sweden offer five sizes of fire-proof storage cabinets.

The DC range consists of the DC64, DC40, DC2.10, DC2.20 and the DC5 which is the smallest and newest in the range. They are available in ivory white, blue, brown or silver colours. Each fire and fall-proof cabinet contains a safe within a safe with double doors.

All types of software can be accommodated and separate lockable compartments provide space for classified data.

Contact: EA Rosengrens AB, Molndalsvagen 85, 412 85 Goteborg, Sweden. Tel: 46 31 81 39 50.

Digitiser

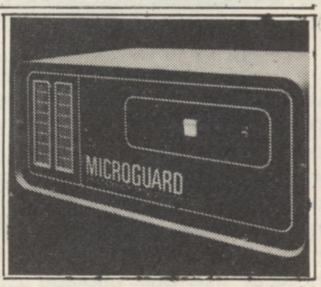
Rapid Terminals recently released a new series of Summagraphic digitisers – the Microgrid digitiser tablets.

There are six tablet sizes and they range in price from £1,528 for a 12 × 12 inch active area to £5,232 for a tablet with an active area of 42 × 60 inches. A IEEE 488 interface, consting £284, will be needed for the Pet.

The digitiser pads can be used in applications such as Cartography and Computer Aided Design (CAD) where drawings have to be transferred into the computer system very accurately.

The tablets utilise electromagnetic induction technology and on all the units the resolution can be set to 40 lines per mm. A choice between a single button stylus or three to sixteen button cursor is offered. Other features include four operating modes, six data collection modes and seven programmable functions.

Contact: Rapid Recall Ltd, Rapid House, Denmark Street, High Wycombe, Bucks HP11 2ER. Tel: 0494 26271.



Back-up

Ever spent two days on the computer working out the company's accounts only to lose everything with a sudden power failure? Microguard's UPS500 Emergency Power System will prevent it ever happening again.

The UPS500 is a 500 VA uninterruptible power supply priced at £1,395 excluding the car battery it uses. It will provide at least one hour's back-up power supply for any Commodore computer and will maintain a constant voltage output of 240 V. The UPS500 is quartz crystal controlled.

Contact: Microguard, 24 Foregate Street, Worcester WR1 1DN. Tel: 0905 21541.

Words, words, words

Last month we looked at wordprocessors in general and two wordprocessors for the Commodore 64 in particular. This month we continue our product survey with more general information about wordprocessors and a look at some more for the 64.

The most important aspect of a wordprocessor is compatibility. Not just compatibility in the sense in which the word is usually used in computing circles but compatibility at the man-machine interface – in other words how easy is it for you to use!

All Commodore 64's are the same but all human beings are different. This means that a wordprocessor that I enjoy using might drive you up the wall with irritation.

In some cases, where a great deal of wordprocessing needs to be done, people find themselves using more than one wordprocessing package. To those who are new to wordprocessing or have only ever used one package or even none at all this might sound a little too much like masochism. After all, learning how to use one package is difficult enough without complicating life by having to learn how to use any more. And then to switch back between one and another... sheer lunacy!'

But it's not half as difficult – or stupid – as it may sound.

As we pointed out last month, the built-in editing features of the 64 are so good that writing a wordprocessing package is easier than it might be. It also means that most wordprocessing packages are the same in most respects. There may be a few differences which mean you have to be careful. CLR usually clears the screen but in many wordprocessors it simply takes you back to the beginning of the text. You have to be careful to remember which wordprocessor you're working on in case you lose all your text with a CLR!

On the whole there really is no problem switching from one wordprocessor to another.

There are packages that are suited to churning out thousands of words of copy which need to be printed out in fairly basic form and there are packages which need to be formatted before a word is typed in. In the latter instance this means that you decide on things like the page width, length spacing and justification beforehand and the words appear on the screen almost as they will appear on the printed page. This is obviously enormously useful if your main use of a wordprocessor is producing complicated business forms and tables. The formatting commands can, of course, be changed at any time.

You can never really see on the screen exactly what you will get on the printed page unless you're using one of the less sophisticated printers. This is because the better printers give proportionally spaced letters. This means that the 'i' or 'l' will take up less space than the 'm' or 'w'. On the screen, of course, each character takes up exactly the same amount of space.

Another obstacle in the way of letting you see exactly what you will get as you are typing is that the 64 screen is a 40 column screen – it can usually only type 40 characters per line. It is possible to 'upgrade' the 64 so that it has an 80 column screen and there is at least one wordprocessing package which I have heard of, but not seen, which gives you an 80 column screen.

The size of the screen is almost always a disincentive to buying the 64 to use as a wordprocessor. But it takes surprisingly little time to get used to it. As long as the wordprocessing package enables you to move quickly throughout the text there is usually little problem in using a 40 column screen rather than the 80 column screen which most people seem to prefer. With an 80 column screen one can't help wondering what the resolution of the characters is like – especially if you're using a television set and not a monitor.

In fact, a monitor is always better for word processing than a television set. This is because the signals fed to a TV set from a computer need to be converted into the sort of broadcast signals that the TV normally receives from TV transmitters. Most monitors can receive a composite video signal which gives a better result than the broadcast signal.

Even better for normal use is an RGB monitor. This is capable of receiving separate signals for red, green and blue – the three primary colours which are needed to make up any other colour. If you intend using your 64 almost exclusively for wordprocessing you won't need to worry about colour so your best bet would probably be a monochrome monitor. We will be covering monitors in much more detail in a forthcoming issue.

These two features will help you but once you've made a shortlist of one or two software packages you should try to talk to someone who is using it, preferably putting it to the same sort of use that you envisage.

Simplywrite

Writing: ***** Because of the built in capabilities of the 64 there really shouldn't be a wordprocessor that doesn't get five stars here. Like Vizawrite this is a menu driven program and like

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Easy Script it does not format the text as it is typed in. Before you can get into the writing you must choose printer options and then select the write mode from the menu.

Printing: **** Fairly standard printing commands and facilities. Perfectly adequate for most purposes but nothing really exceptional.
Documentation: ***** Excellent manual that goes into great detail. Perhaps the best touch is the section by the programmer who explains the thinking behind his programming. It also gives you an insight into the capabilities of the program that might otherwise take months to discover.
General comments: The package as a whole is oddly inconsistent. But then that's a characteristic of just about all wordprocessors. It seems that every word processor has some aspects which are so good that you wonder why no one else has copied them. The splitting up of the Main Text and Extra Text is one of those good ideas which ought to have been copied many times over! Wordpro is at least partly menu driven with a menu line consisting of a group of letters at the top of the screen. Most people who have used a number of wordprocessors must have realised how similar Easy Script is to Wordpro – or should it be the other way round?

Wordcraft

Writing: ***** The first point to note about Wordcraft is that you can't change background or type colours. You're stuck with black type on an off white background. Most people will undoubtedly find this no problem at all, but it would be nice to have a choice. The beep noise as you type is interesting since it changes depending on which key you press. If you don't like it you can switch it off. Wordcraft does not format as you type and it stores text in its own memory in pages. Each screenful constitutes a page so you can only see a page at a time. This can be confusing because you can't really see the bottom of one page and the top of the next together on the same screen.
Editing: *** You can move around the page you're on fairly easily but in order to jump to another page you must specify the page number. This seems to be an unnecessary restriction. It's fairly easy to get used to after a while but at first it can be frustrating hopping around trying to find the right page if you've been used to scrolls and pans. Wordcraft is markedly different from other wordprocessors as far as editing is concerned. Information storage and retrieval: **** A good package as far as storing and retrieving information is concerned. Has all the usual facilities such as Merge and Fill.
Printing: ***** This is where Wordcraft seems to be at its best. There seems to be more in the manual about printing than anything else, for one thing, which helps to strengthen the feeling that the strongest part of the package is its printing.
Documentation: ** How can 51 pages possibly be enough for a wordprocessing program of any power? And the 51 pages include the contents, introduction and index.
General comments: In spite of the shortcomings of the manual Wordcraft is easy to use. Because it's menu driven the manual is not quite as important as it might otherwise be. Would suit either the office or the home.

Script 64

Writing: ***** Any program that has a section headed 'Load and start typing' must start off with an advantage. Thankfully, it's not just hype. You really can load and start typing straight away. Like some of the other programs Script 64 is saved in the computers memory a screen at a time. It does not format text as you type. This program allows you to specify how big the screen should be – as long as it's less than a full screen. One problem is that as you're typing you don't always know when the next paragraph will occur and yet Script 64 treats each new screen as the beginning of a new paragraph. It's quite easy to get round this but even the program writers recommend that you don't completely fill each screen with text.
Editing: *** Comforting to know that in some cases of accidental deletions you can still recover text! Unfortunately the fact that Script 64 saves text in screens does pose problems. It means, for instance, that moving around large pieces of text can be slower. Information storage and retrieval **** One big difference between this and many other wordprocessors is that it saves in screens and in files of 40 screens. The memory of the 64 can hold a maximum of 40 screens at a time – that's well over 800 lines which compares favourably to most other wordprocessors. 999 screens can be saved on each disk.
Printing: **** Script 64 seems to be perfectly satisfactory in all respects. Formatting text for the printer appears to be fairly easy.
General comments: A very neat package with some distinct advantages over some of the others. The big drawback for many users may be the method of saving by screen. Other users, of course, may find it an advantage!

Paperclip

Problems beyond our control prevented Paperclip from reaching us in time for this feature. It has been recommended but we will reserve judgement until we have had an opportunity to use it.

Product: Easy Script
Company: Commodore, 675 Ajax Avenue, Slough SL1 4BG. Tel: 0753 73638.
Price: £75 (disk)

Product: Paperclip
Company: Kobra Micro Marketing, Unit 8, 1/7 Broomfield Road, London W3 9AP. Tel: 01-997 6666.
Price: £78.22 (disk)

Product: Script 64
Company: Impex Designs (UK) Ltd, Metro House, Second Way, Wembley, Middx. HA9 0TY Tel: 01-900 0999.
Price: £60.80 (disk)

Product: Simply Write
Company: Simple Software Ltd, 15 Havelock Road, Brighton, Sussex. Tel: 0273 504879.
Price: £40 + VAT (disk) and £35 + VAT (cassette)

Product: Vizawrite
Company: Viza Software, 9 Mansion Row, Brompton, Gillingham, Kent ME7 5SE. Tel: 0634 813780.
Price: £79.95 (disk) and £89.95 (cartridge)

Product: Wordcraft 40
Company: Audiogenic, PO Box 88, Reading, Berks. Tel: 0734 586334.
Price: £89.95 (cartridge)

Product: Word Pro 3+
Company: Wego Computing, 22A High Street, Caterham, Surrey SR3 5UA. Tel: 0883 49235.
Price: £80 (disk)

Product: Word Wizard
Company: Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX. Tel: 0732 355962.
Price: £6.99 (cassette)

Take-a-guide

How does someone who has a working knowledge of computers choose a system to suit his business. Perhaps Fred Pearson's experience has lessons for other businesses. He ended up with a system, based on a PET, that cost as little as some companies were quoting for the software alone!

"What sort of system will work best for me? Does anyone supply a software program to fit my exact need? How do I go about installing it? Who can I trust for after sales service, support and advice," these are the prime questions put by businessmen considering computerisation.

As one London businessman recently discovered finding the right computer system can be just as difficult for experienced computer users as for newcomers to the field of high technology.

Fred Pearson has been running his unique, highly personalised touring and sightseeing business – Take-A-Guide – for 24 years. Operating in the highly competitive American marketplace means that he must be constantly updating and improving the service in order to keep attracting top clients such as Saudi Arabian princes and film stars like Robert Redford, Lauren Bacall and Anne Bancroft.

Fred had been operating a computerised accounts system on punched cards, using a mainframe on a bureau basis, since 1969. The advent of fast, affordable micros convinced him that it was the time to review computerisation at Take-A-Guide.

The decision making process he employed to find the best solution is a model which could well be followed by other potential systems buyers.

First Fred Pearson experimented. He perused the computer magazines, went to exhibitions and fairs and put hypothetical questions to suppliers and programmers. It didn't take long to realise that he had a relatively up to date picture of what technology could achieve, but that it would take a very long time to explain his requirements to all possible suppliers in order to weigh up the alternatives.

Because Fred recognised that he was likely to need specially written software, to cope with the unique needs of Take-A-Guide and handle the various management reports he required for VAT and Inland Revenue purposes; he decided to write a detailed specification report, which would answer any question likely to be put by a would-be supplier.

Fred took himself away from his busy office for a full six months to write the report and to allow himself time to consider in detail how a computerised system would affect his business and exactly how its power could best be utilised.

Fred then mailed 100 copies of his specification report to dealers and suppliers whose names he had collected over a two year period. "This response was quite astonishing," he recalls. "The top quote was £24,000 with no guarantee of success and most estimated around £7,000 just for writing the software. I got the distinct impression that most dealers quoted on the most expensive system rather than on the most effective for my needs. It took a little time to sort out the sensible proposals".

It came as a pleasant, though not unexpected, surprise to find that one company clearly stood out from the pack. The dealers were Merchant Systems Ltd., under the chairmanship of Neil Hiscox who had written Pearson's original program back in the late 60's.

"Merchant Systems had obviously considered my specification from my point of view. They recommended a Commodore 8096 as the basis of my system because it was a rugged, tried and tested machine which could easily cope with my needs. They got my system up and running for the same amount others were quoting for software alone".

"They sold me an off-the-shelf program – Silicon Office – to cater for my business needs in general and wrote a special program for my more detailed accounting requirements. I use Silicon Office for a variety of ordinary word-processing jobs but it really comes into its own when we are writing itineraries for our clients. We can now select appropriate sentences from our coded descriptions for each area, personalise and print the itinerary in just half an hour where it used to take four!"

A third program, Super Clerk, handles day to day jobs such as bank statements reconciliation and so forth.

The complicated accounting suite of programs was written by Merchant Systems' expert programmer – Simon Hiscox, the 17-year-old son of Take-A-Guide's first system programmer, now Managing Director, who spent four months at Take-A-Guide's Belgravia headquarters perfecting the system.

Three Take-A-Guide staff have been trained by Merchant Systems and Pearson appreciates the thorough and patient help offered even with 'silly' problems. The dealership is big enough to have someone always available to assist yet is small enough to retain the personal touch.

Take-A-Guide's offices in New York and Los Angeles are already using Commodore machines, as will the Spanish office to be opened this year. Fred Pearson anticipates adding to his system by introducing more automation for bookings and other functions.

This time though he won't be putting the business out to tender. He knows that Merchant Systems can provide ideas, equipment and service to meet his high international expectations.

CLASSIFIED

VIC 20 + C2N + 16K; Programmers Aid, mother board, printer, intro to Basic I & II, games tapes, data base tapes, books etc, £400. Tel: 0784 58948 (evenings).

WHO WILL SWAP CBM 64 software. I have lots, Zaxxon, Sunnergames etc. Write to: F. Buys, Fahrenheitlaan 14, 4532 JR, Terneuzen, Holland.

ADMAN SPEECH SYNTHESISOR for the Vic, 4 months old, £30. Dr Watsons Beginners Assembly Language Course (book and cassette) £8. Vic software – Amok (Audiogenic), Destroyer (Sumlock) £1 each. All as new. Mr S Law, 36 Church Street, Littleborough, Manchester OL15 8AA.

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EASYSCRIPT COMPLETE WORD PROCESSOR PACK, with Fill File, for CBM 64, on DISC, with full manual/tutor. Unused. £40. J. Gathercole, 182 Birchfield Road, Redditch, Worcs., B97 4NA. Tel: 0527-45656.

VIC 20 WITH CASSETTE DECK (C2N), 16K switchable RAM pack, light pen (stack), joystick, programmers reference guide and cassette and cartridge software, £180 ono. Tel: (0727) 25207.

CBM 8032 + CBM 2040 dual floppy disc drive, Qume Sprint 5 daisy wheel printer needs slight attention, 'Wordcraft' processor floppy disc, 8 other discs and 'Wordcraft' training cards, £850 ono. D. Taylor (0843) 20202.

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COMMODORE 64, Mathematics 2, GCE 'O' level and CSE revision program, arithmetic equations, progressions, functions, calculus, trigonometry. Brand new, used twice, £7 ono. Tel: (061) 796 9223.

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COMMODORE 64 SOFTWARE

DATAFILE: A database with very powerful options. Includes: – print all/selective records, delete, amend, save, load, copy, alphanumeric sort, user defined fields, memory check, total numeric fields, multi field interrelational, wildcard and search between limits. Multiple file option, and many more. Fully menu driven with complete instructions. Disk and cassette fully compiled. Outstanding value.

CBM 64 (compiled)	cassette	**£7.45**
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TEXTFILE: Powerful word processor. Facilities include:- Large text buffer, auto centre text, variable tab, insert, amend, delete, copy, move text, word count, right justify, pageing, join files, multiple file handling, print all/part text, etc. Fully menu driven with comprehensive easy to use instructions. Great value.

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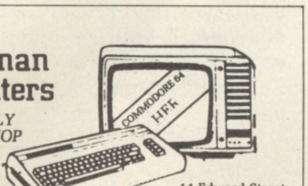

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COMMODORE 64. Protect Manic Miner lives. Send 99p + s.a.e. to Mark Rogers, 43 Coldstream, Ouston, Co. Durham DH2 1LH.

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HELP! In CCI Aug'83 there was an article called "A Complete Nominal Ledger System for Accountants" (part 5). Can anyone send me copies of the previous articles? I look forward to reciprocating at your request. Jim Clefstad, PO Box 154 Mackenzie, BC – Canada Voj 2 Co. Tel: (604) 997-6096

WANTED – Modem software for the CBM 64 with minor miracles WS2000 world standard modem compatible with following standards: CCITT V21, V23. 300 full duplex, 1200 half duplex, 1200/75, 75/1200 full duplex and American Bell 103/113/108 and Bell 202. Tel: (01) 337 3183 evenings and weekends.

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DISK DRIVE FOR PET 2001-8 WANTED. Contact: Trevor Burton, Bunbury, Cheshire CW6 9SX. Tel: (0829) 260868.

THERE IS A LARGE SELECTION of quality public domain software available for the Commodore 64 but importing it from North America is costly. I hope to greatly reduce the cost by setting up a public domain users group. If you are interested please contact B. Conroy, 85 Upper Drumcondra Road, Dublin 9, Ireland.

COMMODORE 64 owner wishes to hear from other users throughout the world so that we may exchange public domain software. If you are interested please write to L. Murphy, 3 Woodlands Drive, Stillorgan, Blackrock, County Dublin, Ireland.

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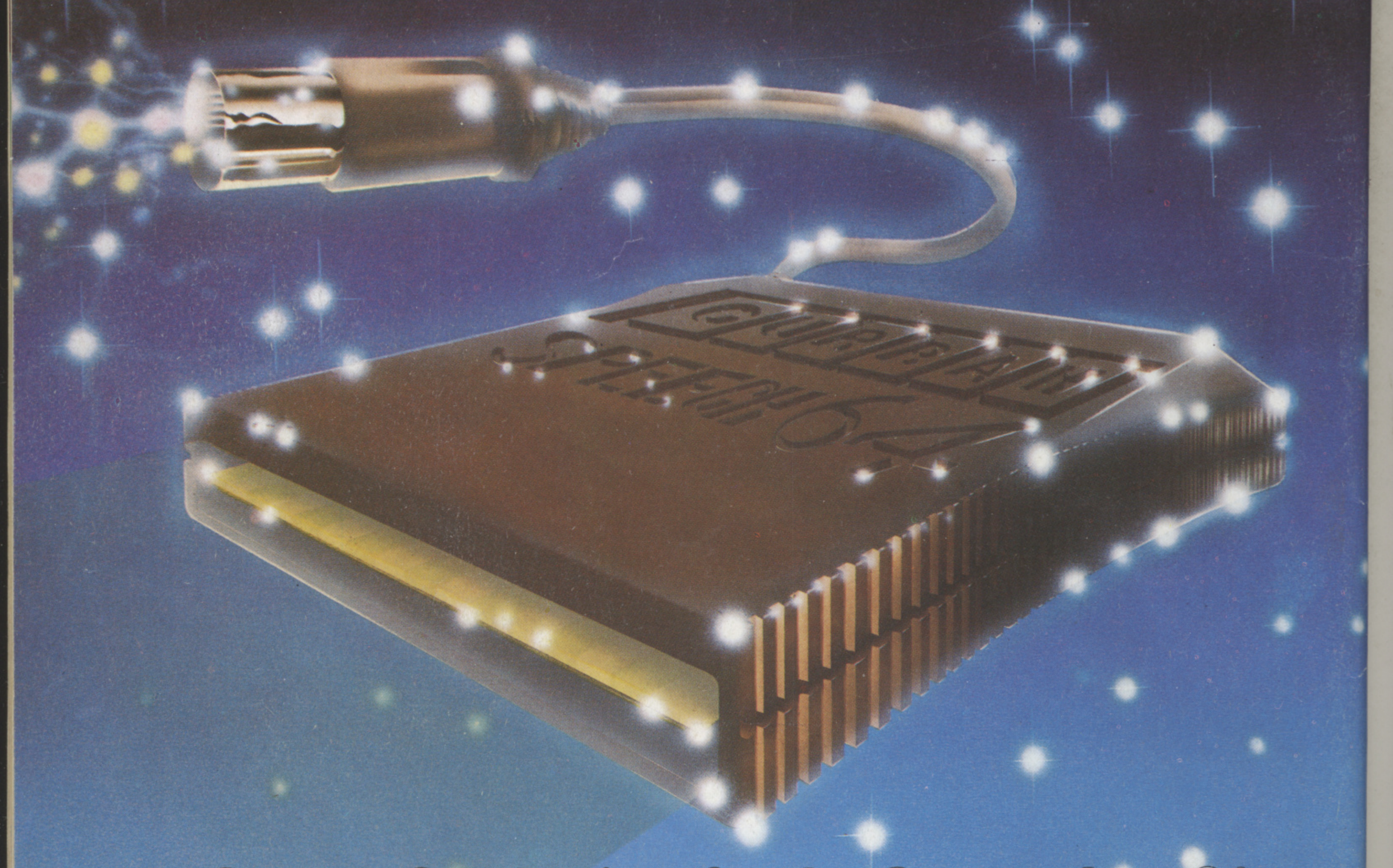

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